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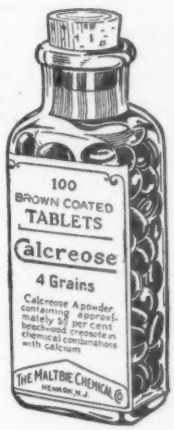

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RICHMOND, VA., AUGUST, 1927

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DIAGNOSIS OF THE ACUTE ABDOMEN IN CHILDREN.*

By F. H. SMITH, M. D., F. A. C. P., Abingdon, Va.

The title of this symposium, The Acute Abdomen in Children, is an effort to avoid a a fault common with medical books. The text-books describe disease as if the diagnosis were the known quantity, the given factor, in the equation, the symptoms and signs the unknown quantities. We are forced, therefore, to set up one or more tentative diagnoses, and then read through the list of symptoms and signs of these diseases to determine whether or not the case in mind fits one or the other diagnosis. At the bedside, the problem is reversed. The patient utters some complaint which he regards as the most important, or "presenting" symptom, together with a number of what may be subsidiary symptoms. To these we add what we may bring out by examination and laboratory research. Out of these facts we construct a diagnosis. In this sense, in the sense of a "presenting symptom", I take it, the phrase, The Acute Abdomen, is used in this symposium.

Even so, the title is still too general. The child with an acute abdominal condition doesn't say he has an "acute abdomen". In some way or other, he manages to convey to our senses what, nine times in ten, is his major complaint—his one sure bet—he has the bellyache! Hence, it is my purpose to follow the child's lead. I mean to take his complaint, pain, and through it approach the study of the differential diagnosis of acute abdominal conditions.

Pain is, of course, the expression of overstimulation of sensory nerves. The child's nervous system may be said to be normally hypersensitive. That is, its adjustment or balance is delicate. It takes slighter stimuli to induce response in them than in the adult. Hence, we expect a child to react violently to what is perhaps a very trivial ailment; for example, a generalized convulsion from intestinal parasites. Abdominal pain is no exception to this rule. Possibly this hypersensitiveness explains why children pass so readily into shock with acute abdominal conditions and at operation.

Speaking generally, all hollow abdominal viscera have a double innervation: the vagus supplies motor impulses; the sympathetic, inhibitory. These antagonistic impulses must be nicely co-ordinated for perfect function. To empty any hollow viscus there must be relaxation of sphincter or lower segment at the moment of contraction of detrusor fibers. A perfectly adjusted balance keeps the digestive functions out of the realm of consciousness, except for a general sense of well-being. But maladjustment brings consciousness of pain. It is the same mechanism brought into play whether the disturbing factor be merely a mechanical irritant, like an undigested meal, an intestinal parasite, or a gall-stone; or irritation inducing spasm at a distant point, as the pylorospasm of appendicitis; or the primary spasm and final paresis of inflammation. In fact, there is little difference in the mechanics of any painful affection of hollow viscera.

The autonomic nervous system has a very extensive distribution outside of the abdominal cavity. It happens frequently that some disturbance arising within this extensive territory of the autonomics is referred to another part supplied by the same system. Hence, we may explain the complaint of abdominal pain in middle ear disease, and earache with pneumonia.

I am aware of the fact that it is unorthodox, if not actually bad form, to present a paper without numerous citations from published articles, and without extensive bibliography. Nevertheless, I shall take the risk of such criticism, for I am persuaded that the nearer we can bring these sessions to the old-time "experience meetings", the more shall we be edified thereby. So I shall confess that the only "literature" I have consulted is that making up 13,846 case histories of the Johnston Memorial Hospital.

*Presented at the meeting of the Southwestern Virginia Medical Society, Pulaski, Va., March 24-25, 1927, as part of a symposium on "The Acute Abdomen in Children Under Ten Years of Age."

To be explicit: We have tabulated all the cases of children under twelve years who have uttered as the major complaint, acute abdominal pain. We may have missed some cases of acute abdominal disease in this way, as I shall explain later. As it is, we have found 146 cases. Children under twelve years constitute about 10.5 per cent of our cases, say 1,400. If so, about 10 per cent of all children, excluding the newborn, came to the hospital because of abdominal pain.

Associated with and revolving around the complaint of pain, there were all sorts of symptoms in all sorts of combinations Nausea and vomiting are almost as frequent as pain; fever, constipation or diarrhea next; then headache, cough, urinary disturbance, pain and weakness in the lower limbs, vaginal discharge, even pain at such remote parts as the eye or the ear; or bleeding from the gums, eruption, and so on, through the list of symptoms covering the whole range of diseases. The very unexpectedness of certain symptoms associated with abdominal pain has more than once been the feature that has saved us from embarrassing situations.

We find that of our series the cause of the abdominal pain was intra-abdominal and surgical in 67.8 per cent. So that the chances are a little better than two out of three that a child admitted to a hospital with abdominal pain has some acute surgical condition within the abdomen.

Just here, let me caution you that there are at least two sources of error in following out our scheme of studying acute abdominal conditions by way of the complaint of pain. In the first place, we must remember that these cases are confined to children of all ages up to twelve years. It is notable that there is not a single case of simple intestinal colic in the list. Yet simple colic is the most frequent cause of abdominal pain in young children. A number of newborn babies in the hospital have had colic, as they have the world over. The reason they have not been included is because the baby cannot *say* it has a pain in the abdomen, and we are including only a declared complaint. The same reason explains any omissions that may have occurred of other cases. In them, though pain may have been present, we had to supply the complaint for the baby: Hence crying, abdominal distention, a palpable mass or vomiting and not pain, may have been recorded as the major complaint. This reminds me that the youngest case of acute appendicitis we have recognized was in a baby of fourteen months, whose presenting symptom was diarrhea.

Then, too, remember these are hospital cases and, therefore, are one-sided. In a sense, this is a pity for two reasons. First, such studies as this make hospital men too dogmatic and critical. To say that every case of bellyache in children has a two-in-three chance of representing some acute abdominal emergency is foolish. Yet, thinking only of his own experience in hospital work the surgeon is all too apt to criticize the general practitioner when he misses or mistreats one of these cases that does have a surgical abdomen out of an untold number which have nothing serious. On the other hand, if it were the fact, and if that fact were known, that the chances were "fifty-fifty" that a child with pain in its abdomen had some serious abdominal emergency, probably each case would be investigated until one assured himself that the cause is trivial. We would then have fewer of the desperate surgical cases and more of the earlier ones.

At least, we can say that simple colic should be attended with simple colicky pain, perhaps gaseous distention, and nothing else, and should be relieved promptly by an enema.

At the risk of seeming to go out of my bounds: It is next to criminal to administer a purgative in the presence of acute abdominal pain; and it is altogether criminal to do so as a therapeutic test of the diagnosis, on the theory that if the purgative goes through, no obstruction or inflammatory paresis; if it fails to go through, there may be such a catastrophe.

Simple colic disposed of, injuries omitted because their nature is obvious, we find the following intra-abdominal conditions in our list: Acute appendicitis in its several phases; peritonitis, localized, regional or diffuse; intussusception; Meckel's diverticulum; strangulated hernia; tuberculosis of the mesenteric lymph nodes; sarcoma of the ovary; the several forms of intestinal toxemia and inflammation; typhoid and paratyphoid fevers.

This covers an experience of about sixteen years, and I suppose will very nearly represent the usual intra-abdominal conditions in childhood. If so, there are very few causes

which give rise to strictly surgical emergencies in the child's abdomen. Because of their frequency and because of their serious potentialities, two of these should constantly be borne in mind. Acute appendicitis and the several forms of acute intestinal obstruction are the great abdominal emergencies of childhood. Around the question as to whether or not the child has appendicitis or obstruction revolves the whole problem of the disposition to be made of him. For, if he has either, the case is imperatively and immediately surgical; whereas, if both these conditions can be eliminated from the possibilities, time may be taken for further study.

However time-worn the subject, we cannot harp too much upon appendicitis in children. So long as 81 per cent of children with appendicitis are admitted to the hospital with gangrenous or perforated appendicitis, abscess or peritonitis, someone is still blamable. I am frank to add that it is usually the mother who has erred. The story is so often repeated that it is only after calomel, oil, or salts has failed to act, or failed to relieve the pain, that the doctor is called. However, the fact remains that we have lost only one case of appendicitis operated upon before the appendix had ruptured, and that death could be fairly attributed to complicating pneumonia; whereas our mortality in the perforated cases is 22 per cent.

Of the acute abdominal diseases entering this hospital, 86 per cent were acute appendicitis, or the intussusceptive or adhesive type of acute intestinal obstruction. Differentiation between the two seems easy, but it is not always as easy as it seems. In appendicitis, we expect in the early course more fever, more tenderness and localized rigidity, a higher leucocytosis. In obstruction, especially in intussusception, the pain is more intermittent, there is more vomiting, more shock; if there are stools, they are apt to lose their fecal content and to be mucous or bloody; and there should be little or no fever, nor leucocytosis.

But, after all, differentiation between the two is of academic rather than practical interest. Both borne in mind as possibilities, we can think out the symptoms and signs we may expect. Acute abdominal pain associated with vomiting, moderate fever, shock, generally or locally tender and rigid walls, constipation, sometimes diarrhoea, and leucocytosis, will generally stand for one or the other of the two surgical emergencies of childhood.

Hernia should present definite signs; tumors of abdominal or pelvic organs should be be palpable; tuberculous mesenteric glands usually give pain through the adhesive peritonitis provoked.

Occasionally, even in childhood, we are confronted with the question of an early differentiation between acute appendicitis and the typhoid group of fevers. A mistake in either direction is serious. Typhoid fever in childhood is atypical oftener than typical. Acute pain is frequently the first recognized complaint. The Widal reaction appears too late to be helpful. Practically, the most positive differential clue is the blood count. Acute abdominal inflammation should be attended with leucocytosis; typhoid fever should not. Unfortunately, there are exceptions in each case.

I do not go far wrong when I say that some 33 per cent of children admitted to the hospital with abdominal pain represent mistakes or doubts in diagnosis. This is the number whose trouble was outside the abdomen, or, at least, non-surgical. The great majority of these children would not have been sent to the hospital had the physician not thought, or feared some acute surgical condition. It should not be forgotten that if the chances are two in three that the abdoinal pain arises from acute surgical conditions within the abdomen, the chances are still one in three that it is extra-abdominal, or extra-surgical, at least. There is about a 33 per cent chance of error in accepting abdominal pain at its face value, at least in childhood.

Of our series, about 29 per cent of these exceptions were due to infections of the upper urinary tract; about 29 per cent to general infectious disease; 23 per cent to pneumonia; 7 per cent to spinal or cord disease; the rest were scattered.

Ureteral pain is usually referred by the child to the abdomen. An intermittent abdominal pain associated with fever higher and more irregular than that of most abdominal diseases; a cloudy urine in which are suspended purulent looking bodies: call to mind the possibility of that condition loosely called pyelitis. Trite as it sounds, no child should

be submitted for surgery until its urine has been examined microscopically. Paradoxical as it is, we wish sometimes we had never looked at its urine. For, if pus is present, we may be set right or we may be misled in diagnosis. A little pus, even red cells and casts, may accompany acute appendicitis; and the more virulent the attack, it seems, the more apt is this confusion to arise. It is just as true, and introduces just as much bewilderment, to admit that a violent case of "pyelitis" may have no pus in the urine at some one examination. The pus is temporarily dammed back. A saving sixth sense sometimes comes to the rescue and sets us straight.

We all know why the child should refer to its abdomen pain originating in the chest or spine. The abdominal walls are supplied on the one hand by branches communicating with the lower intercostals supplying the parietal pleura and the outer half of the diaphragm; and, also, by branches coming off directly from the lower thoracic and lumbar cord. It is a well known law of nerve pain that it is referred to its peripheral termination. The child, therefore, refers the pains of its chest and back to the abdomen.

Whether or not the pneumonic patch can yet be demonstrated, we are very suspicious of an abdominal diagnosis when the child has a flushed face, visible waving of the alae nasi, its respiratory rate is disproportionately rapid, and its leucocytosis higher than the average in acute abdominal inflammation. It is not often that attentive observation fails to bring out a patch of pleurisy at least.

As a rule, the only difficulty in diagnosis in the spinal cases arises from failure to look at the back. A definite kyphos, spastic spinal and, possibly, leg muscles, pain and tenderness radiating around the left flank as well as the right, should make the diagnosis of abdominal pain in such a case certain. In this series there is a very interesting case of bilateral herpes zoster of the abdominal wall in a young child.

All of us know, too, the frequency of complaint of abdominal pain at the onset of practically any one of the acute infectious diseases. It was a common source of chargrin during the influenza epidemic, for instance, to refer a case of influenza for operation. So we have had referred cases of acute tonsillitis, lymphadenitis and lymphangitis, bronchitis, rheumatic fever and Devil's grip. Two of the cases are especially interesting. They were instances of Henoch's or abdominal purpura, fortunately saved from operation by the presence of purpuric spots on the surface. Had it not been for the presence of these spots, we would almost certainly not have thought of the special blood examinations necessary to determine the diagnosis.

And so there is no easy or certain rule of diagnosis. The game would lose much of its interest, if there were.

The conclusion is a very obvious one to all of us in the abstract; namely, there can be no diagnosis until a complete history has been obtained, a thorough examination made. If, in the individual case, the child be literally stripped and examined from head to toe, then diagnosis in pediatrics will likewise be stripped of much of its difficulty.

George Ben Johnston Memorial Hospital.

SURGICAL TREATMENT OF THE ACUTE ABDOMEN IN THE CHILD UNDER TEN YEARS OLD.*

By W. C. CAUDILL, M. D., Pearisburg, Va.
St. Elizabeth's Hospital.

Fortunately, the child under ten is not subject to all the acute surgical conditions peculiar to the abdomen of the adult. But among those that do occur are numbered some of the most serious and most disastrous in the entire realm of surgery. Gastric and duodenal ulcer, acute cholecystitis and diseases of the adnexa are rarely found in the child under ten. On the other hand, acute appendicitis, intestinal obstruction, general peritonitis and abdominal injuries occur frequently. Strangulated hernia and acute pancreatitis are observed less frequently.

As a general rule, the young child is considered a poor surgical risk. This is accounted for in part by a number of anatomic and physiological factors more or less peculiar to the child. The relatively high position of the caecum may make it possible for a ruptured appendix or an appendicular abscess to be placed high in the abdominal cavity from which infection is more serious. Occasionally the excessive mobility of the colon is undoubtedly favorable to intussusception. On account of the short omentum,

*Read before the Southwestern Virginia Medical Society, at Pulaski, Va., March 24-25, 1927, as part of a symposium on "The Acute Abdomen in Children Under Ten Years of Age."

a perforated appendix that otherwise would have become a walled off abscess may result in a general diffuse peritonitis. The process of digestion and metabolism in the child is delicate and easily upset. The adjustments of water and mineral salts in the tissues may be disturbed by slight influences about which as yet little is clearly understood. The inefficiency of the child's heat regulating apparatus, the undeveloped state of the autonomic nervous system, which is often oversensitive and poorly controlled, and the unstable circulatory system, all play a part in making surgery of the young child more hazardous.

APPENDICITIS.—This is by far the most frequently acute surgical condition of the abdomen of the child, and no subject has been more freely and thoroughly discussed. The mortality rate and the time for operation have received more attention than the technic of the operation. It is now fairly well settled that the safest method of treatment is operation at the earliest possible time after the diagnosis is made and that, irrespective of the number of days that have elapsed since the onset of symptoms. However, it must be freely admitted that occasionally a case which is localizing may result fatally if interfered with; and also, if the conservative method of treatment be adopted, some lives will be lost as a result of the delay. The course fraught with the greatest danger is hard to determine. If it could always be accurately determined whether or not the infection is definitely localizing, then the choice of procedure could be more readily made. But again, it must be admitted that this cannot always be done, even by the surgeons of greatest experience; hence, we are forced to rely upon our surgical judgment and the individual merits of the case.

We frequently see a child brought in to the hospital with a history of an attack that started several days ago. The chances are that a correct diagnosis of acute appendicitis was made in the beginning of the attack, and that immediate operation was advised by the attending physician. But there were extenuating circumstances and after a strong argument with the parents the physician acquiesced and the chance was taken to leave the child alone and hope the attack would soon pass off. But the attack did not pass off, several days elapsed, and now the picture is that of a critically ill child. The child is probably a blond, very pale and with pinched expression. The temperature is subnormal, and the blood count is normal or below with a slight increase of polys. The abdomen is distended with more or less rigidity and tenderness over its entire area, being intensified in the right lower quadrant. It is evident we are dealing with a ruptured appendix with general diffuse peritonitis and that nature has utterly failed in every attempt at localization. It is from such cases as this that the mortality is usually drawn. Should this child be operated upon as soon as it enters the hospital? It has been our custom in the past to do so, and we believe it is the same in most of the hospitals throughout the state. But I believe that instead of operating on a child of this type as soon as it enters the hospital, it should first be put to bed in a Fowler position, stomach washed if it is vomiting, heat applied externally, dextrose given intravenously and by proctoclysis, and hot fomentations applied over the abdomen. After several hours, or perhaps several days, if continued improvement is noted, opening the peritoneal cavity under local anesthesia and inserting drainage will give the child the greater chance for recovery.

But of course, how much greater would have been the chance for this child if operation had been done within the first few hours after the beginning of the attack?

The high mortality rate of appendicitis has been recently pointed out and emphasized by Willis and others. It is evident the mortality is still too high and that no appreciative reduction has been noted in the past few years. Effective reduction in the mortality rate will not depend, half so much, upon whether the child is operated upon as soon as it enters the hospital or a few days afterwards, as it will upon operation within the first few hours of the attack. If a vigorous educational campaign were carried on emphasizing the fact that it is vitally important that the child be operated upon not only during the first attack, but within the first few hours of the acute attack, to my mind it would do more to lower the mortality rate than any change in the method or technic of the operation. The attending physician should clearly point

out the dangers of delay, and stubbornly hold out for immediate operation.

The technic for appendectomy, both for the simple and complicated case, is now fairly well standardized. Therefore, I do not deem it necessary to go into detail on this subject. I should merely like to emphasize a few points already well known.

Great care should be exercised to avoid injury to any nerve, lest wasting of the muscle fibers involved be caused and a hernia result. I try carefully to preserve the small nerves that are frequently isolated in separating the muscle fibers of the rectus. The abscess or infected area should be carefully and thoroughly screened off from the rest of the abdominal cavity to avoid actually extending an infective focus that has already become limited or definitely circumscribed. So far as possible, all raw surfaces must be covered with peritoneum as there is a distinct risk of consequent intestinal obstruction due to adhesions. When an abscess forms around a perforated appendix, lying in front of the ileum in the center of the abdomen, a very dangerous condition is produced. In this position it is important to do the minimum of breaking down of adhesions but the appendix should be removed in the majority of cases. If the abscess be behind the end of the ileum, it is very likely that the condition may be accompanied by obstruction of the end of the ileum, which is a serious condition.

The question of drainage has undergone considerable change during the last few years. The peritoneal cavity is now being closed with much more boldness than formerly; however, there are eminent authorities who warn against this procedure. Cope says "We have tried the method of closure of the abdomen without drainage in cases of perforated appendix which seem more suitable than any others for such treatment and we have regretted it nearly every time. We therefore consider that the risk of drainage is less than no drainage, for the cases referred to were such as would, in our experience, have given no trouble with drainage." Our experience, coincides with that of Cope and we feel that it is usually better to drain these cases.

Intestinal Obstruction.—There is perhaps no condition that the surgeon is called upon to treat that presents a more grave and disastrous emergency than that of intestinal obstruction in a young child. What has been said about the urgency for early operation in acute appendicitis holds good for intestinal obstruction with ten-fold more emphasis. The danger of the condition increases, almost wtih geometrical progression, with every hour that elapses before operation. Moynihan says "It is not too much to say that in a consecutive series of twenty cases of average intensity, the condition disclosed at operation will show that in at least fifteen operation has been too long deferred". The greatest precaution should be observed in the use of morphine in the beginning of these cases. The free and injudicious administration of morphine is responsible for many a disastrous result in cases of acute obstruction.

There are two main factors to be considered in the treatment of every case of intestinal obstruction. The first, and of lesser importance, is the mechanical block in the bowel. The second, and unquestionably the more serious, is the septic absorption from the intestinal tract. The higher the obstruction, the more virulent are the toxins, and the greater the prostration and poisoning produced by them. In operating upon these cases, three factors must be kept constantly in mind:

1. To relieve the obstruction.
2. To deal with any damaged bowel.
3. To combat toxemia.

Gentleness, speed, dexterity and judgment, all must be brought into play if the surgeon is to be successful in his operation for intestinal obstruction. Before starting the operation, every means possible for combating shock should be at hand. As soon as the peritoneum is opened a search is made for the obstruction, and if blood-stained fluid escapes, the cause is usually strangulation of a coil of intestine and this will be found most freqeuntly in the pelvis. If the fluid is clear, the block may not be so easily located, and if not uncovered after a short search, special care must be used in exploring the internal openings of both inguinal, both femoral, and the obturator canals, as well as the duodenojejunal and retrocecal regions, the foramen of Winslow, the common mesentery and the meso-sigmoid. With the obstruction found and released, two important questions must be settled at once: first "does any bowel need resection?"; second, "should an enteros-

tomy be performed?" In many cases it will be easy to determine whether the bowel should or should not be resected. The difficult cases are those in which the bowel appears almost black when released, but which under treatment by warm saline gradually recovers its circulation, and to a certain extent its elasticity, but still is far from normal. The characteristics of healthy bowel are a pink color, a glistening peritoneal surface, and elasticity. If intestine which has been strangled does not fairly quickly regain these three characteristics, it is generally wiser to resect it.

When it is impossible to relieve the obstruction, and unwise to do a lateral anastomosis, then it is necessary to relieve the acute symptoms by means of an enterostomy. Or the obstruction may have been successfully relieved and on account of the severe toxemia it may be wise to do an enterostomy in order to drain the foul material from the intestine and avoid flooding the system with the virulent toxins. It must be remembered, however, as Moynihan points out, that by reason of the enterostomy the patient may rally from his prostrate or even moribund condition, while an ensnared loop of bowel, a volvulus or an intussusception may be progressing steadily toward gangrene. He says the operation of enterostomy, therefore, though undoubtedly a life-saving measure to be remembered and employed when circumstances dictate, is, nevertheless, one to be used with reluctance, to be considered only in the last extremity of the patient's distress.

It will require too much time to give in detail the different techniques of intestinal resection, and I therefore merely wish to say that every surgeon should have in mind a pretty definite program which he proposes to follow in performing this operation. We have found it very helpful to operate a dog house in order to keep the technique constantly fresh in mind, and at the same time have much practice in intestinal suturing. We would recommend this to other small clinics who do not do a great deal of this work.

It was a hot day and eight cars were waiting their turn at a filling station. The last one was a steaming little rattler. Finally it got its turn, and the peevish attendant yelled: "How many gallons?"

The driver of the thing held up one finger.

"Say," bellowed the attendant, "what are you tryin' to do? Wean it?"—(*Selected*).

OUR OBSTETRIC PROBLEM.*

By L. A. CALKINS, M. D., PH.D., University, Va.

Pregnancy and labor is a physiological process. Should we challenge such a statement? Well, we might.

There are in Virginia each year five hundred mothers and over five thousand babies who lose their lives as a result of this so-called "physiological process". Such a loss of life is hardly consistent with the terms "normal" or "physiological". As students we were told that there was no such thing as a normal pregnancy, or else our teachers handled the subject by merely failing to define a normal pregnancy. In the last fifteen years obstetric knowledge and investigation has made truly remarkable advances. However, the mortality rates for both mothers and babies have not materially decreased in that time. What can be the reason or reasons for this lack of improvement? It must either be that the people at large, knowing what should be done, have failed to take advantage and make proper use of their knowledge, or it must be that the people at large have not become acquainted with the facts, and that the medical profession has failed to extend this knowledge to the people. I think you will agree that, in general, the latter supposition is more nearly correct than the former. The medical knowledge of the general public has, however, been greatly improved in the past ten years along all lines. Obstetrics has come in for its share, and people today are asking for more and better maternity care and are demanding more of the profession in this respect, in so far as their knowledge and pocket books will permit.

We cannot over-estimate the good results from the syndicated talks of Drs. Evans and Copeland appearing in *The Daily Press*. Public health organizations by their clinics and free literature have also done a world of good. The individual physician, on the other hand, has been a bit backward in educating his own clientele and the general public in his own community because of his fear that people would consider him to be advertising his work or his fear that he would be overstepping the bounds of medical ethics. Ways and means have, however, been found in some few localities whereby, through radio talks or

*Read before the South Piedmont Medical Society, April 19, 1927, at Lynchburg, Va.

public lectures, sponsored by local medical societies, people have been given maternal welfare instruction, sometimes in the case of radio talks without announcing the name of the speaker. Perhaps the most concrete and effective education of the public, when employed, has been the individual physician's advice and instruction to his own private patients. This advice is, and always will be, given the closest consideration and obedience by the individual patient.

Just what do we now know, of a useful nature, that we did not know fifteen years ago? There are three things of major importance that are largely developments of the last fifteen years.

First, it has been shown that, if one will employ the rectal examination as a routine measure in place of the vaginal examination, he will reduce his incidence of puerperal sepsis by one-half. If we have only half as many cases of septicemia, we will probably have only half as many deaths. This would mean in Virginia a saving of seventy-five to a hundred mothers a year.

Second, we have learned that, if we will take the blood pressure and do a urinalysis on our pregnancy cases once a month throughout the first seven months, and more frequently in the last two months, we can reduce the incidence of severe pre-eclamptic toxemia, nephritic toxemia and eclampsia by three-fourths to four-fifths. This would mean a saving of one hundred to one hundred and twenty-five mothers a year in Virginia. It would also mean a saving of about four hundred babies a year.

Third, we have learned that, if we will treat all cases of syphilis during pregnancy, nearly one hundred per cent of such babies will be born alive and well. This would mean very little saving in life as far as the mothers are concerned, but would constitute a saving of nearly a thousand babies a year in this State.

Very simple facts these three, easily handled—and yet, in general, not sufficiently appreciated. We have all heard a physician say that his patient was not suffering from any toxemia because he had examined her urine six or weight weeks previously. It is well known that most toxemias become fully developed within a period of two to four weeks. Moreover, I have seen several patients with severe toxemias, whose blood pressure was not over 140 systolic, and many other women with blood pressures of 160 and 170 who had little or no toxemia. The difference between these two classes obviously is that the first group had *normal* blood pressures of 100 to 110, whereas the second group had *normal* blood pressures of 160 to 170. We must, therefore, if we are to detect early toxemias, have several blood pressure readings on each individual early in her pregnancy so that when a toxemia appears later in her pregnancy we can detect the *change* in her blood pressure. It is this change in the blood pressure rather than the actual height of the blood pressure which is so important.

The syphilis problem is a very simple one if we will just remember that it is often impossible to diagnose syphilis from either history or physical examination. The answer is obvious. We cannot know that syphilis is present in such cases without the help of a Wassermann test. I do not mean to say for a moment that the Wassermann is thoroughly reliable. Especially is this true of the so-called "partially positive" or "two-plus" Wassermanns. The repeatedly four-plus Wassermann, however, is not often to be doubted, and it would be far better to treat all four-plus Wassermann cases than to allow any material number to go untreated. The State Board of Health is affording us an excellent service in this field.

The use of the rectal examination as a routine measure during labor speaks for itself. True, it is a little more difficult to become expert in the use of the rectal examination than it is to gain proficiency in the use of the vaginal examination. It is also true that one cannot *always* rely entirely on his rectal examination findings, and finds it necessary to do an *occasional* vaginal examination. It is a fact, however, that every physician who has done a large number of rectal examinations comes to prefer this method as a *routine* procedure, and therefore would not consider doing a vaginal examination except in the rare case where it becomes necessary.

I would consider the above named three points as the most important developments of the last fifteen or twenty years. I might add that we are still not taking the greatest advantage of our knowledge gained previous to this time. An accurate diagnosis of the presentation and position of the child and

accurate pelvimetry will beyond doubt decrease the mortality from the so-called "accidents" of labor, mal-presentation, prolonged labor, and disproportion. This would mean a saving of twelve hundred to fifteen hundred lives per year in this State.

I once heard obstetrics defined as "that branch of medicine which has for its purpose the obtaining of live, healthy babies with as little injury to the mother as possible". If we are to practice this branch of medicine to the best advantage, according to this definition, and in the light of our present knowledge, it would seem obligatory that we must do the following things on *every woman* who comes to us for care during pregnancy and labor:—

(1) Careful history and physical examination.

(2) Accurate internal, as well as external, pelvic measurements.

(3) Wassermann examination.

(4) Blood pressure and urinalysis once a month in the first seven months, twice in the eighth month, and once a week in the ninth month.

(5) Limit the vaginal examination to the unusual case where it is necessary and employ, as a routine measure, the rectal examination.

(6) Determine the presentation and position of the child at frequent intervals in the latter part of pregnancy in order to avoid the abnormal presentations as well as the unfavorable presentations as far as possible.

When we do all of these things and do not omit any one of them, we can readily differentiate the normal from the abnormal cases, and thereby decrease our present high mortality. We have not, however, discharged our whole duty to our patients and to the public in general until we have educated them to the point where they will know how to do their part in reducing our present high maternal and infant mortality.

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THE TREATMENT OF FRACTURES OF THE SPINE.*

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Lawrence Hospital.

Our experience with fractures of all parts increases with the progress of civilization. Good roads and nationad prosperity enable one out of five of us Americans to own automobiles. Many of us can own a flying machine and practically all can afford a ride on a passenger or freight train. We are naturally a nation of travelers, and the faster we move the better pleased we are.

The spine comes in for its share of damage, and it is with fractures of this structure that I propose to deal. During the past seven years my associates and I have dealt with thirteen fractures of some part of the spinal column, to wit:

Third cervical vertebra	1
Fourth dorsal vertebra	1
Sixth dorsal vertebra	1
Twelfth dorsal vertebra	1
Second lumbar vertebra	1
Third lumbar vertebra	2
Fifth lumbar vertebra	1
Transverse process, 1st lumbar vertebra	1
Transverse process, 1st, 2nd and 3rd lumbar vertebrae	1
Transverse process, 2nd, 3rd and 4th lumbar vertebrae	1
Fourth sacral segment	2

We have followed the plan of operating on all cases of fracture of the spine where there is cord injury manifested by paralysis. Laminectomy was performed five times in this group of six cases that had paralysis following injury.

The sixth case, a boy, aged sixteen, fell from a tree, landing on the buttocks, and was unconscious for an hour. There was loss of bladder control for three weeks, but no paralysis of legs. He came to us four months later, run down in health, with deep cough, and evening temperature 103. There was marked kyphos at the first and second lumbar vertebrae, with an old fracture through body of fifth lumbar; no paralysis, no abscess; there were moist rales at base of both lungs. The spine was stretched, and cast applied. Temperature was reduced, and cough relieved, and he was discharged from hospital on twentieth day, to return for further treatment. One year later roentgenogram showed first and second lumbar vertebrae healed, no kyphos,

*Read before the North and South Carolina Section of the American College of Surgeons, Charlotte, N. C., January 21, 1927.

the fifth lumbar slightly deformed, but healed. I am of the opinion that this case belongs to the class described by Kummel, and later by Baker, of Ann Arbor, and called "Kummel's disease", a condition following an injury to

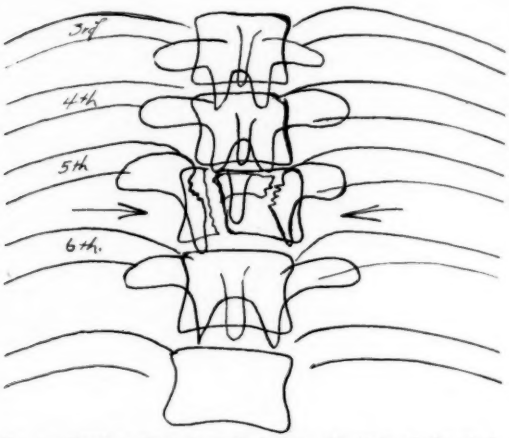

Fig. 1.—Fracture through sixth dorsal. Diastasis of the sixth and seventh vertebrae, with rupture of the pleura.

the spine, coming on after a few weeks or months, characterized by pain, disability, local signs of bone injury, especially kyphos. This patient is now well (four years after injury) and working daily.

Of the five cases operated on by laminectomy, one died six hours after operation. One shows no improvement, neurologically.

The death: a young man, aged twenty-three, with fracture of third cervical vertebra, the result of diving, paralyzed from clavicle down. Laminectomy followed by autopsy showed complete severance of the cord.

The patient that shows not improvement: Woman, aged twenty-four, was struck by an automobile, fracturing the sixth dorsal vertebra, causing complete paralysis below, associated with compound fracture of right tibia and fibula at ankle, and compound fracture of fibula just below right knee. Operation revealed fracture of sixth dorsal vertebra, diastasis of sixth and seventh dorsal vertebrae, rupture of capsular ligament, dislocation of seventh ribs with opening into the pleura, both sides of the spine. A few days later, gas gangrene developed in the foot and leg, necessitating amputation just below the knee. The patient now (two years after injury) is completely paralyzed from seventh segment down; otherwise, she feels well, gets about in rolling chair, and keeps herself occupied by hand work. (Figures 1 and 2).

Fig. 2.—Two years after injury, paralysis from sixth segment down.

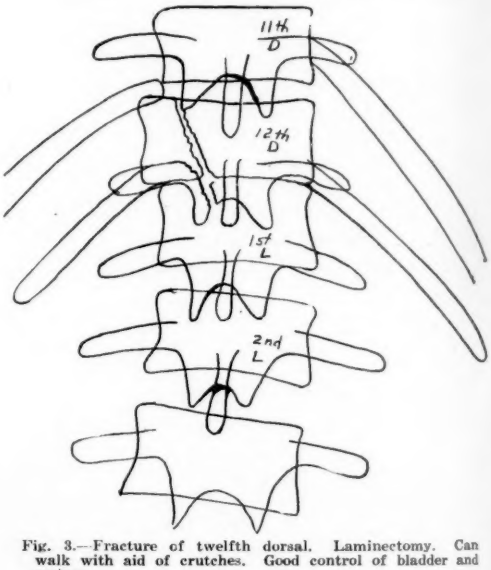

Fig. 3.—Fracture of twelfth dorsal. Laminectomy. Can walk with aid of crutches. Good control of bladder and rectum.

The other patients upon whom operation was performed are—One: Fracture of twelfth dorsal with complete paralysis below. Regained control of bladder and rectum and can

walk with aid of crutches; sexual function normal—four years after injury. (Figure 3).

Fig. 4.—Fracture of third lumbar. Laminectomy. Can walk with aid of crutches. Bladder and rectum normal. Eighteen months after injury.

Two: Fracture and dislocation of third lumbar vertebra; complete paralysis below; regained control of bladder and rectum; can stand alone and walk with aid of crutches; sexual function normal—now eighteen months after injury. (Figures 4 and 5).

Three: Fracture of third lumbar vertebra; complete paralysis below; regained control of bladder and rectum can walk and work as laborer—now seven years after injury.

Of the other seven patients in this report, one had fracture through body of second lumbar vertebra, with severe scalp wound; no evidence of cord injury. Cast applied the seventh day after injury (on his own responsibility) and he left the hospital in a truck and has not been heard from since. He was a rum runner and preferred a quiet retired sequester for his convalescence.

Four: Fracture through body of fourth dorsal vertebra, with fracture of skull; no manifestation of cord injury; made a good recovery.

There were five cases of less serious fracture, three fractures of one or more lateral process of lumbar vertebra, and two fractures through sacral segments. No case had paralysis, and all recovered.

Treatment

Upon admission, these patients are made as comfortable as possible. A careful physical examination is made to determine, if possible, the location of the fracture. Roentgenograms are made until we are statisfied as to the existence of a fracture and its location. If there is cord injury to the extent of paralysis, we operate as soon as the condition of the patient will allow. The cord is exposed by removal of the spinous processes, laminar fragments of bone and blood clots, making sure that all pressure is removed. It is better to go from one to two vertebra above the lesion. We have not made an effort in any of our cases to suture the cord; in fact, we do not open the dura, depending upon palpation and inspection for sub-dural pressure due to clots. We believe that the risk of infection and subsequent meningitis, due to opening the dura in the presence of so much trauma, is greater than the chance of sub-dural pressure due to

Fig. 5.—Eighteen months after injury; see also Fig. No. 4.

hemorrhage. The wound is closed in layers with catgut, one cigarette drain down to the cord, and skin closed with linen. The patient is placed on a firm bed, no cast, frame or other restraining apparatus being used. The patient is placed in the care of an intelligent, energetic nurse, who firmly believes, along with the surgeon, that the patient can be saved. The position is frequently changed, every four hours during the day and every six hours during the night; the back and all paralyzed parts

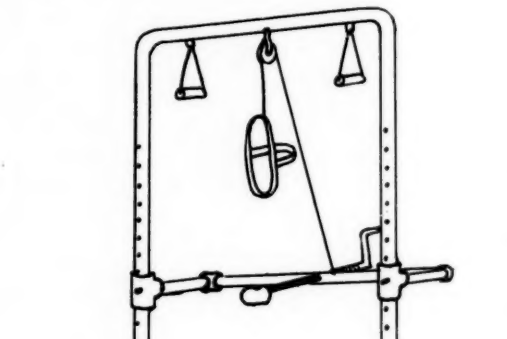

Fig. 6.—Frame devised by Dr. G. C. Cooke, Lawrence Clinic, for stretching the spine in application of cast.

being bathed at each change of position. The legs are not allowed to cross one another and the heels receive careful attention. The bladder and rectum are under constant vigilance. Allow the patient to go twelve hours and, if he does not void, catheterize under the strictest aseptic precautions. If pus appears in the urine, irrigate the bladder, gently, with 2 per cent solution of hot boric acid. It will do no harm to look into the bladder occasionally with the cystoscope to survey the condition of this viscus. The rectum is kept clean by daily injections of hot soap solution, and frequent digital examinations are made to be sure that impaction of feces does not occur. Keep the patient and bed dry and fresh. The drain is removed on the sixth to tenth day, and the stitches in the skin removed when the judgment of the surgeon will permit. If the patient does well, he is gotten up at the end of the third to sixth week, his spine being stretched on a "Cooke frame" (see Figure 6) and a cast applied from hip to axilla, after which time he is allowed up in rolling chair. In a few days he may go home, to return monthly for inspection and adjustment of cast. If all is well, the cast is removed entirely at the end of three to four months.

Under this regime, not one of our cases developed decubitus ulcers in the hospital, and only one developed them after going home. The longest stay in hospital in this series was sixty days, the shortest twenty-eight days, this, of course, including the cases showing paralysis, who were operated upon.

If bed sores develop, the scene changes and the case becomes more serious, and the stay in hospital is much prolonged; however, in the most severe type of ulcer the patient's life must not be despaired of. I refer to the case reported by Walter C. G. Kirchner, of St. Louis, S. G. O., June, 1923, to show what can be done with a case apparently impossible. "Keep on keeping on" (Riley), and we will eventually make the patient and ourselves happy.

Cases of Less Serious Fracture

It is our opinion that all fractures of the spine above the sacrum, it makes no difference how slight, should be treated with the cast until firm union has taken place. Hospitalization is seldom necessary in fractures of the spinous or transverse processes, unless other injuries exist. The two cases of fracture through the fourth sacral segment were treated by a well-fitting pelvic binder with good results.

In conclusion, let me emphasize:

First: Make a most careful examination of all back injuries, especially roentgenologically.

Second: Laminectomy should be performed in all cases of paralysis.

Third: Careful nursing and frequent change of position while patient is confined to bed are important.

Fourth: Close attention should be given to bladder and rectum.

Fifth: No cast or restraining apparatus should be used until patient is able to be up

in rolling chair; then cast should be applied in sitting position with spine stretched.

Sixth: Require patient to wear cast until firm union has taken place, determined by roentgenogram.

Seventh: Exercise and massage will hasten muscle tone.

VON JAKSCH'S DISEASE AND SECONDARY ANEMIA OCCURRING IN TWINS WITH REPORT OF CASES.*

By THOMAS D. JONES, M. D., Richmond, Va.

In order to emphasize some of the points that I wish to bring out in connection with these cases a brief discussion of the subject might be profitable.

"Anemia Infantum Pseudo-leukemia" or von Jaksch's disease, was mentioned by Gretzel in 1867, but the first clear clinical description of the condition was given by von Jaksch in 1889. He believed that he was dealing with a primary blood condition accompanied by enlargement of the spleen and liver and a definite blood picture pathognomonic in its nature which was not leukemia but which might at any time degenerate into a leukemia similar to that found in adults. Careful study of the condition since von Jaksch's original publication has, however, failed to show that any cases degenerate into true leukemia. Some French investigators at one time considered it a primary anemia closely allied to leukemia. Many British writers consider it a distinct disease at the present time, while most American authors consider it a secondary anemia with a relatively distinct clinical picture. Lucas and Fleischner state that it is probably a reaction to some type of infection, the organism not always being the same, but that the affect on the blood forming organ *is* the same. Sailer considers it a doubtful clinical entity, but states that in spite of that fact it is the most easily recognized of all the chronic forms of splenomegaly occurring in infants. Aschenheim and Benjamin apparently considered it a part of the clincal picture of rickets and suggested rachitic splenomegaly as the proper term for the disease. It is undoubtedly often associated with rickets, but may be secondary to tuberculosis, syphilis, intestinal catarrah; and a history of other conditions recognized as causes for secondary anemia in infants in general, such as prematurity, twins, improper feeding and the like, is often obtained. The age at which it is practically always seen is from six months to two years. There have, however, been cases reported as old as four years. The exact cause is apparently obscure.

Prognosis:—Porter and Carter state that recovery takes place in from sixty to seventy per cent of the cases. Holt and Howland considered the prognosis very grave. Of sixteen cases coming under their observation, twelve were known to have died and the other four were lost sight of. Lucas and Fleischner state that the prognosis should be very good, but that the infants show little resistance to intercurrent infections. Death may occur from the disease itself, but is more often due to some intercurrent infection.

Symptoms.—There is a slowly progressive pallor which often becomes extreme. A petechial rash is often seen in the advanced cases. The superficial lymph nodes are often moderately enlarged, but this symptom is by no means constant. The liver is found to be enlarged to a moderate degree in about fifty per cent of the cases. Splenic enlargement is a constant finding, and it may be enormous, filling the entire left side of the abdomen. The enlargement is generalized and the organ feels firm and rounded on palpation. There is no tenderness. There is often emaciation which may be extreme, although some cases may appear fairly well nourished. The infants are apathetic, showing little interest in their surroundings; the appetite and digestion are poor. The blood picture, while subject to many variations, is fairly characteristic. The majority of cases show a leucocytosis of from 20,000 to 50,000, although there have been cases reported in the literature with a white cell count as low as 5,800 and as high as 80,000. There is more often a relative increase in the lymphyocytes, but this is not constant. Monti states that the proportion of white cells to reds may be anywhere from one to one hundred or one to fifteen. Eosinophiles are sometimes slightly increased. The red cells are usually around two million or under. There is great irregularity in size. Nucleated reds are often found in considerable numbers. The hemoglobin may be from fifteen to eighty per cent.

Treatment.—The work of Bunge has shown that the human infant is born with a reserve supply of iron in the liver intended to last

*Read before the Richmond Pediatric Society, March 31, 1927.

until he can take food containing more iron than the small amount found in milk. It has also been shown that the greater part of this reserve is stored during the last three months of intra-uterine life, so that the premature baby is born with a storage deficiency. L. W. Hill has found that infants fed on exclusive milk diet after eight months often develop severe anemia. Therefore, normal infants should have iron conveying foods added to the diet after six months. The principal foods suitable for this purpose at this age are egg yolk, prune sauce, and spinach. Liver pulp and scraped beef are highly valuable in older infants. Desanctis adds egg yolk to the formula of premature infants as young as two months. It has been found that an infant one year old requires two milligrams of iron daily. It is difficult to make up a diet suitable for that age containing that much iron without the use of one or more of the above articles, so that, as a prophylactic or active therapeutic measure, diet is perhaps the most important thing to be considered. Rapid improvement has been observed following transfusions. Inorganic iron in some form is of value in some cases. Bass has found that in those cases of anemia in infants not due to infections, inorganic iron is of great value.

The conclusions reached from a study of the following cases coincide with the views of most American observers, that the condition is not a distinct clinical entity, but rather a secondary anemia with a distinct clinical picture.

Case Reports

Case 1.—R. J. J., white female, age twelve months. Was twin, born two and a half weeks premature. The birth weight was around six pounds. Delivery was normal; baby was normal at birth, father and mother living and healthy. Two brothers and two sisters living and healthy. Developmental history was normal. Was breast fed for six weeks; was then taken off the breast and put on formula of cow's milk dilution with Mellen's Food until eight months old, when other foods were started, but were given very irregularly. Baby did not take other foods with relish, so that the principal feeding to the present time has been cow's milk with Mellen's Food. Mother stated that baby's appetite was very poor and that she could not get her to take anything but milk. The baby had apparently always been well up until three weeks ago, when she became very fretful and irritable and appeared to have "cold in the chest" which was the chief complaint at this time. Physical examination: Baby was fairly well nourished, weight 19 pounds 3 ounces; skin and mucous membranes very pale; six teeth had erupted, superficial lymph nodes were very slightly enlarged; anterior fontanel open about one ince; posterior fontanel closed. Cranial bosses were not prominent; there were no epiphyseal widenings; there was slight beading of ribs. The throat was mildly inflamed; breathing was somewhat "stuffy," but the lungs were negative. Heart sounds were rapid, but no murmurs were heard. Spleen was palpable about one and one-half inches below the costal margin, was firm and rounded, but not tender. Liver was palpable about one inch below the costal margin, abdomen was slightly distended. Temperature was one hundred. There was a petechial rash over the chest and abdomen.

Blood examination: The white cell count was fourteen thousand, polys sixty-five per cent, lymphs thirty-four per cent, eosinophiles one per cent. The red cell count was 1,880,000; there was marked irregularity in shape; hemoglobin was thirty-five per cent.

Child was put on a suitable diet, and feeding schedule which included liver pulp, spinach, scraped beef, egg yolk and fruit juices, and five grains saccharated carbonate of iron three times a day. The case was seen again one week later, at which time the mother stated that the child had continued very restless, and that she had been unable to get her to take the foods ordered. She had lost four ounces in weight, had a very irritable cough and was very restless. At this time the red cell count was 1,800,000, white cells 16,200, sixty-nine per cent polys, thirty per cent lymphs, one per cent eosinophiles. Hemoglobin was twenty-seventy per cent. The throat was considerably inflamed and a few scattered rales were heard over both lungs. The ears were negative; the temperature was 101.2. The baby had obviously lost ground in the past week and had evidently gotten up an acute upper respiratory infection. In view of those findings it was thought that a transfusion would offer about the best hope for tiding the case over this infection. Baby was sent to a hospital and a transfusion of 100 c.c. of mother's blood was given by the Unger method

(by Drs. Fitzgerald and Richardson). There was a mild reaction following the transfusion, but the baby looked much better about twelve hours later. Color was much better and the hemoglobin had gone up to thirty-eight per cent. A few hours later temperature went up to 105.5. The respiration became very rapid and definite signs of a pneumonic process developed in lower left lung. The condition grew progressively worse and death occurred about twenty-six hours after the transfusion.

Case 2.—P. J. J., white female, age twelve and one-half months, twin sister to *Case* 1. Mother stated that baby had been very restless, had a very poor appetite, and she felt that her condition was very similar to that of her sister. The feeding history was identical with that of above case. She was fairly well nourished; weight was twenty pounds five ounces; skin and mucous membranes pale; anterior fontanel was open about three-quarters of an inch; posterior fontanel had closed. The superficial lymph nodes were not enlarged. Six teeth had erupted. There was no pronounced evidence of rickets. The chest was negative. Abdomen was soft and flat; liver and spleen not palpable; no masses were felt and there was no tenderness.

Blood examination: Red cell count 2,620,000; white cell count 6,000; hemoglobin thirty-eight per cent. The baby was put on a suitable diet including iron-conveying foods, and was given saccharated carbonate of iron in 5 grain doses t i.d. Was seen again two weeks later and was greatly improved. Had gained one pound and one ounce in weight, appeared much happier, and was taking food well. Blood examination at this time showed red cell count 3,500,000, hemoglobin fifty-seven per cent. Two weeks later she had gained fourteen ounces. The red cell count had gone up to 4,000,000, hemoglobin sixty-five per cent.

In both of these cases there was a clear history of several distinct factors known to have a tendency to cause anemia in infancy, such as twins, prematurity, and inadequate diet. Inasmuch as the same causative factors were operative in both cases it would seem reasonable to suppose that the conditions were primarily the same and that the difference in the clinical aspects of the two cases was dependent upon the degree of the process.

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Medical Arts Building.

THE RECTUM AS A FOCUS OF INFECTION.*

By W. L. POWELL, M. D., Roanoke, Va.

When we consider the variety of conditions that have been found to be the result of focal infection, and a great many others which may be aggravated by it, no possible source of such infection should be neglected. The most frequent and obvious foci are the teeth, tonsils, sinuses, intestinal, and genito-urinary tract. These are usually thoroughly investigated, but the rectum is seldom considered in such an investigation, even though it is a region in which we would expect often to find such condition.

When we consider the abundant bacterial flora, the colon, staphylococcus and streptococcus normally present, and which become pathological when a break is made in the mucous membrane, and the frequency with which this region is subjected to trauma, the wonder is that it is not more frequently the cause of systemic infection.

The anatomy of the rectum, especially the abundant blood and lymphatic supply, suggests the strong probability of any local foci becoming general. The mucous membrane of the lower end of the rectum is gathered together into longitudinal folds called the columns of Morgagni. The base of each column joins with the dentate margin to form the upper limit of the anal rectal line. The tops of these columns extend upward and are lost in the smooth mucous membrane of the lining of the rectum. These columns vary in number from five to twelve. Stretching between them are thin folds of mucous membrane called the semilunar valves of the rectum. Extending downward behind these folds are de-

*Read before the Southwestern Virginia Medical Society, at Pulaski, Va., March 25, 1927.

pressions or pockets, called crypts of Morgagni, which normally contain some mucoid secretion, and pathologically act as a trap for bacteria and fecal material.

The pectinate line separates the internal and external sphincters in the anal canal. The rectum receives its blood supply from the superior, middle and inferior hemorrhoidal and middle sacral arteries. The veins correspond in name and distribution to the arteries, but return the blood through two distinctly different channels. The internal or superior hemorrhoidal vein collects the blood from the rectum proper and empties it through the mesenteric vein into the portal circulation. The middle and external veins and the middle sacral vein collect the blood from the external surface of the rectum and anus and empty it into the general circulation through the vena cava. The pectinate line forms the division between these circulations, but there is undoubtedly considerable communication between the two systems (Tuttle).

The pectinate line also forms the division line between the two systems of lymphatics. Those from above the line drain into the sacrolumbar glands, and those from below drain into the inguinal glands. This is of considerable clinical significance when considering metastasis in malignant disease.

According to W. A. Fousler (University of Minnesota), the common types of infection, either alone or in combination, located in the rectum are: first, general proctitis, usually associated with colitis; second, infected hemorrhoids; third, ulceration of the rectum; fourth, cryptitis; and, fifth, sinuses leading off from the rectum.

General proctitis is easily diagnosed through the proctoscope, and may be due to a variety of causes.

Infected Hemorrhoids.—Most proctologists concede that a thrombosed vein in the rectum furnishes an ideal media for promoting infection. Either the toxins from the infective bacteria, or the bacteria themselves readily gain entrance into the general circulation.

Ulceration of the rectum is, of course, due to bacterial infection, and is easily diagnosed, but a thorough search must be made of the entire mucous membrane, as they are frequently overlooked, especially between the valves of Houston.

Cryptitis.—This condition is best searched for with a bivalved speculum. They may appear normal, but if a probe is bent on itself and slipped into these crypts it will often be found that they extend downward beneath the mucous membrane of the anal canal for a considerable distance and act as a trap for bacteria, and form ideal conditions for their growth and development. It is from these infected crypts that abscesses most frequently develop, which result in sinus formation. These sinuses leading off from the rectum frequently open into these crypts, or they may extend downward and outward. Sinuses occasionally extend upward beneath the mucous membrane and open above. Cryptitis is believed by Terrell to be responsible for a large percentage of cases of pruritis ani.

At the Hospital for Joint Diseases in New York City, where special attention is given to the diagnosis and treatment of focal infection, a series, numbering hundreds of cases, has been collected in which rectal foci were responsible for arthritis of the monarticular and polyarticular type (Goldman). The colon bacillus was the most frequent offending organism, with an admixture of staphylococcus and streptococcus. Bacteria were seldom recovered from the distal lesion, the symptoms being produced by the action of bacterial toxins. When pus was present in the affected part, a leucocytosis was present, but was not found if the trouble was caused by the toxins alone. The bacteria developed in the foci in the rectum showed a selective affinity for the joints, and occasionally the heart.

The most common types of rectal foci found in this series were ulcerated internal hemorrhoids, blind internal fistula, and acute and chronic ulceration of the anal canal.

J. W. Visher, in the United States Veterans' Bureau Bulletin, believes that "infection of the organs supplied by the portal vein may reach the liver by way of the portal circulation, thus causing hepatitis, which is spread by the lymphatics to the gall-bladder, bile ducts and pancreas." He reports two cases of pancreatitis and diabetes, whose conditions were markedly improved by surgical treatment of the rectal conditions.

Pennington, in the *Journal A. M. A.*, volume 87, No. 25, states that all hemorrhoids are either infected or potentially so.

Sheaffer has recently reported a metastatic brain abscess, the foci being an old stricture of the rectum. Post-mortem showed the bacteria in the brain abscess to be the colon and streptococcus.

In our search for foci of infection, let us not blame it all on the obvious sources, but examine the rectum thoroughly, and remember that any lesion of the rectum may at any time become a focus. It is just as important to correct these lesions as it is to remove infected tonsils and abscessed teeth, which are potentially foci for systemic infection.

SOME OBSERVATIONS ON INTESTINAL OBSTRUCTIONS.*

By T. J. HUGHES, M. D., Roanoke, Va.

The subject of intestinal obstruction is a problem of abdominal surgery which has engaged the most serious discussion of surgeons of this and other countries of civilized nations for centuries. Without recounting the multiplicity of opinions and statistics of the leading men on the subject, this brief paper will deal only with a short outline of some of the principles underlying this extremely grave condition and which have been impressed upon the writer by experience and observation, as to the time and method of resorting to operative interference.

The symptoms of intestinal obstruction, ranging from constipation to gradual or sudden inability to secure a bowel movement, are so well standardized and familiar to all that, for the sake of brevity and repetition, their description will be omitted.

The paramount question in the mind of most men today is when to operate, and what to do when we do operate. As already stated, the symptoms, particularly of acute or complete obstruction, are so familiar that a diagnosis is readily made by the attending physician, and usually the only decision resting upon the surgeon is how long to temporize with enemas, etc., before opening the abdomen. To my mind, the responsibility of when it is safe to close the abdomen without draining the intestine by enterostomy is much greater than the decision when to operate.

In intestinal obstruction you have an interruption of the motor function of the upper gastro-intestinal tract, whether it is due to adhesions following surgical operations, to malignant or inflammatory infiltration, or to exhaustion.

Early lavage in functional ileus is indicated to remove a gross weight which must interfere with the recovery of tone in the bowel. Lavage should anticipate vomiting, which is itself exhausting to the patient. When lavage and enemas fail to effect a thorough movement and relieve the distention, valuable time may be lost in waiting to open the abdomen.

Reports of the following cases will serve to emphasize my reason for this paper.:

Case 1.—A child, three years old, was admitted to hospital with complete obstruction. A large sausage-shaped mass could be easily outlined following the course of the descending and transverse colon. A diagnosis of intussusception was made.

This case is interesting particularly for the length of time of its illness, which extended over a period of several months, and its rapid recovery following operation. It had been treated by several doctors during its illness, and its condition had been diagnosed as colitis.

The little patient was so nearly starved to death, not having been able to retain sufficient nourishment for months, we feared it would not survive an operation. Operation was decided upon, however, as the only hope of relief. Upon opening the abdomen, the cecum was found to have traversed the ascending, transverse and descending colon, until the appendix presented in the rectum. A second invagination of the descending colon had occurred.

The invaginations were reduced without difficulty, and the abdomen was closed hurriedly by through and through silkworm-gut sutures. The baby was able to retain nourishment as soon as it reacted from the anesthetic, and its recovery was so rapid its mother was insistent upon taking it home the next day following the operation, and, against all advice, left on the third day, at which time the baby was taking nourishment freely and its recovery was uneventful.

Case 2.—A young woman in the twenties developed intestinal obstruction following an operation for appendicitis. The abdomen was opened, the adhesions freed and the obstruction was apparently relieved.

The abdomen was about to be closed, when a brief discussion by the surgeons resulted in an enterostomy with small rubber tube being

*Read before the Southwestern Virginia Medical Society, at Pulaski, Va., March 25, 1927.

left in for drainage of intestinal contents. The patient lingered bewteen life and death for weeks before a thorough bowel movement occurred, and, although her recovery was long and tedious, she would certainly have died had the abdomen been closed without an enterostomy.

Case 3.—Man, well past middle age, developed symptoms of acute obstruction, was desperately ill and an immediate operation was decided upon. The obstruction was due to a band producing a kink in the lower third of the small intestines. Soon after the obstructing band was severed, the patient passed per anus a large quantity of liquid fecal matter and his condition was temporarily improved. Alarming symptoms developed, however, the following day and the abdomen was re-opened. The cecum and part of the ileum were filled with fecal matter and the intestines seemed to be paralyzed. A cecal anus was made, which failed to function after twenty-four hours; a sound was introduced into the ileum for several inches and this started a free drainage of the intestines, after which the patient made a rapid recovery.

Case 4.—This patient, a man about thirty years of age, was admitted for intestinal obstruction of two days' duration. No movement of the bowel could be effected. There was a history of obstinate constipation since operation for appendicitis in an Army Hospital during the World War, and once or twice he had had attacks of incomplete obstruction, requiring repeated enemas to move bowels. Operation was advised and performed immediately. Complete obstruction was found near the ileo-cecal junction by bands of adhesions. These bands were resected and the intestines, when freed, immediately became inflated, and the uppr abdomen, which had been tightly distended, became soft.

My inclination was to do an enterostomy to evacuate the gas and drain the distended intestines. The man was in such good physical condition, and it was so apparent that the obstruction had been relieved, that we decided to close the abdomen without drain. For twenty-four hours all went well and one or two large liquid stools followed operation. Alarming symptoms gradually supervened, and the abdomen was reopened and an enterostomy done, but with no avail, and the patient died on the third day from toxemia.

These cases are selected as belonging to different classes of physical risks. I am of the opinion that Cases 2 and 3 would have died without an enterostomy, and that Case 4 might have recovered had intestinal drainage been instituted sooner.

My experience and observation have led me to the following conclusions:

First: That valuable time is often sacrificed by endeavoring to relieve obstruction by numerous drastic enemas.

Second: That we should never postpone opening the abdomen until fecal vomiting has occurred, which should be classed as a post-mortem sign rather than a pre-operative symptom.

Third: That every case of obstruction should be placed in a hospital during the first day of its onset, and treatment directed toward placing the patient in the best possible condition for operation.

Fourth: That an enterostomy should be done at the primary operation in every case where operation is delayed and the intestines are distended as secondary operations in intestinal obstruction are grave procedures, and rarely accomplish the results desired.

ETHMOIDITIS.*

By FRED E. HAMLIN, M. D., M. Sc. (Medical), Roanoke, Va.

It is my purpose to present a few of the many symptoms and diagnostic points of ethmoiditis which general practitioners may find of value in their work.

The infections of the nasal sinuses are more frequent than we realize, and no part of the body can have an infection more securely concealed.

Let us first refresh our memories as to the location and anatomy of the ethmoid labyrinth. The ethmoid is not a true sinus and we call it the ethmoid capsule. It is likened unto a sponge and is in the nose proper, whereas the true sinuses—maxillary, frontal and sphenoidal—are contained in hard bone and empty into the nose through their respective ostei.

The ethmoid labyrinth occupies all that portion between the lateral plates of the orbit and approximately one-half the space between the floor of the nose and the cribriform plate. The continuation of the crista galli downward

*Read before the Southwestern Virginia Medical Society, at Pulaski, Va., March 25, 1924.

corresponds to the perpendicular plate of the ethmoid. The ethmoid and maxillary sinuses are present at birth; the frontal appears about the sixth year, while the sphenoid develops during the first year. The number of cells within the ethmoid at birth are between two and four, which later in life will number from six to twelve.

The ethmoid is compared to a box and is separated into five divisions by curved lines or lamellae. The third division is the heaviest and three times as thick and is called the lamella of the middle turbinate. The second lamella goes anteriorly and is called the uncinate process, and coming off from this is the first lamella, or bulla of the ethmoid capsule, and the fourth is called the superior turbinate.

The blood supply of the ethmoid capsule is from the superior nasal branch of the sphenopalatine posteriorly and anterior nasal and ethmoid arteries above. The venous anastomosis is very important to remember as the return circulation is in direct contact with the dural veins. The anterior and posterior ethmoidal veins accompany their respective arteries into the orbit and then empty into the ophthalmic vein which empties into the cavernous sinus.

The ethmoidal veins anastomose with the longitudinal sinus through the small perforations in the cribriform plate. This direct anastomosis accounts for the high mortality in meningitis following ethmoid infections. Skillern says he never saw a case of meningitis of nasal origin recover.

The physiological function of the sinuses is to heat, filter and moisten the inspired air and act as a resonator for the voice. Old observers believed the sinus cavities were to lighten the bony framework of the head, but the authorities of today have disapproved of this theory.

The normal sinuses are protected, first, by the action of the cilia of the mucosa with a movement towards the osteum, and, second, by the secretory glands in the mucosa which have an inhibitory power over the invading organism. The above is not true if there is interference with aeration and drainage.

The middle turbinate or third lamella is not a true turbinate, does not contain swell bodies, and is called the pendant portion of the ethmoid. This turbinate is the keynote in treating ethmoid infections. Suppose we compare the ethmoid capsule with a box and the middle turbinate we will call the lid. On removing the lid we expose the different lamellae or divisions of the ethmoid between which are located the small cells; those of the anterior group connect with one another and drain into the hiatus semilunaris underneath the anterior end of the middle turbinate, and those of the posterior group drain posteriorly above the middle turbinate.

As to the pathological classification of ethmoids, we must consider acute and chronic types, acute catarrhal, acute suppurative, chronic catarrhal or hyperplastic, chronic suppurative with or without polyp formation. Infections are classified as local and general but most of the local become general under favorable conditions. All infections must begin their process as local but few remain local.

The acute catarrhal is nothing more than we first find associated with any attack of acute coryza lasting over a week. The acute suppurative is exceedingly rare and is found complicating some of the infectious diseases. Rarely do we see the acute cases, as the family physicians are the first consulted and naturally prescribe the initial treatment. In chronic hyperplastic ethmoiditis mechanical obstruction seems to play the most important role. This may be brought about by frequent attacks of colds, each attack causing a thickening of the mucosa. For example, one will have a cold and the cells that drain well will seem to be entirely clear. On the other hand some of the cells will not be so fortunate as to have good drainage and the process of repair will be much slower. Perhaps by this time the patient has another cold, thereby throwing an extra amount of congestion on the cells that have not entirely recovered from the original infection. This condition favors the formation of polyps. The patient after recurrent attacks of colds will give the symptoms of a chronic cold, and every exposure to draft, cold or getting wet will bring on violent attacks of sneezing and profuse watery discharge from the nose with ocular symptoms. The sense of smell is more or less lost due to the blocking of the olfactory fissure which extends from the anterior superior part of the middle turbinate to the anterior wall of the sphenoid sinus.

Bronchial asthma is frequently associated with hyperplastic ethmoiditis and many cures of asthma have been reported after operation on diseased ethmoids. The American Laryngological Association had its first symposium on sinusitis in 1899, which was on "Diseases of the Ethmoid Region and Asthma."

Chronic suppurative ethmoiditis is usually associated with a suppurative process in one of the larger cavities although it can be present as a separate process. One of the frequent causes is forceful blowing of the nose during an acute coryza, forcing the infectious material into the ethmoid. During the summer season you will see many cases of ethmoiditis due to forceful blowing of the nose as a result of swimming and high diving. The discharge is always purulent and on inspection of the middle turbinate one will see it covered with crusts, which condition is caused by the drying action of the inspired air. The symptoms depend upon the virulence of the infection, the amount of involvement and question of drainage. There is no history of headache if the drainage is good, while, on the other hand, if it is the closed-in variety, the headache will be intense and diffuse in type.

A patient will sometimes seek advice regarding the condition of his throat as a result of the constant dripping in the nasopharynx. He will have either nasopharyngitis or laryngitis and will be constantly hawking and clearing the throat in an attempt to get up the down-flowing secretion. During sleeping hours this secretion is constantly pouring down the nasopharynx due to the position and relaxation of the patient. The major portion of this secretion is deposited on the dead spot of the pharynx, the area which has no cilia, and is coughed up as soon as the patient awakens. He will tell you it takes an hour to clear the nasopharynx of the tenacious secretion, occasionally producing nausea.

In the ethmoid infection we naturally expect the head pains to be of different character from those of the true sinuses surrounded by hard bony walls. Head pains with infection of the true sinuses come on and leave, as a rule, at a definite time, the position of the patient being the chief factor in the time of appearance. Headache from ethmoid involvement is usually over the parietal region, is dull in character and continuous in whatever position the patient assumes. Sometimes after the pain subsides the scalp remains sensitive to pressure. Another frequent location of ethmoid pain is over the root of the nose between the eyes. A patient will complain of pain, wedge-like in characater, pressing apart the tissues. Deep seated pain in the eyes is present only when stagnation or pressure occurs. Skillern points out the following pathological conditions as causative of headache:

First.—Swelling of the mucosa with nerve pressure;

Second.—Direct contact of mucosa with that of the opposite side, thus obliterating the sinus cavity or converting it into a slit-like aperture;

Third.—Absorption of toxins;

Fourth.—Stagnation in the sinus due to mechanical obstruction on the already inflamed mucosa;

Fifth.—Negative pressure within the sinus.

Skillern thinks this last cause has been exaggerated. Such terms as sympathetic and nervous headaches are misnomers and are rapidly becoming obsolete. Only a few years ago all sinus pains were called sun pains by the laity.

Dental headache due to diseased molar, pulp stone or a molar out of line may, by transmission of impulses through the trigeminal fibers cause a temporary congestion of the mucous membrane of the sinus, producing a pain very similar to that of a sinus. The discharge from the anterior ethmoid, frontal and maxillary cells will be found in the anterior part of the nares flowing from beneath the anterior tip of the middle turbinate and down over the anterior portion of the inferior turbinate.

Now, the question of differential diagnosis enters. We know that pus from either one of the above named sinuses will drain beneath the anterior tip of the middle turbinate. It is easy enough to pass a Lichtwitz's needle under the inferior turbinate into the antrum and irrigate with warm saline solution. If pus is absent, one can eliminate the maxillary sinus, but the presence of pus will necessitate going a step further. Have the patient return to the office in three or four hours and irrigate again. If pus is present this time, it is self-evident that it is coming from above as it is not possible for the mucous membrane to secrete pus so rapidly, and it must be due to a reservoir, either in the frontal or ethmoid. To eliminate the frontal, one considers the clinical picture with special reference to pain. The transilluminator may be of some value, though oftentimes misleading. In the majority of cases the frontal sinus may be irrigated, probably necessitating the infraction of the middle turbinate.

Now we have made our diagnosis of empyema of the ethmoid of the anterior group

and very likely there will be the same thing existing in the posterior group due to the thinness of the mucous membrane and the cell wall. If the posterior group is involved, one will see the discharge on the uvula and on the lateral pharyngeal wall. No nasal examination is complete without posterior rhinoscopy with the nasopharyngoscope. In the above condition a view of the posterior tip of the middle turbinate will show it to be bathed in pus. Owing to the close relationship of the posterior ethmoid cells and the sphenoid, we naturally expect both to be infected at the same time. The frequency of the combined infection of the posterior cells and sphenoid is more or less dependent upon the depth of the sphenoethmoidal recess. If this empyema remains very long, naturally we expect polyp formation. Due to the gravity of the secretion, the pendant portion of the ethmoid, the middle turbinate, is frequently the site for the formation of polypoid tissue. The uncinate process is the most common location for polyps, and these may extend far out into the nose, being attached only by a small pedicle.

Anosmia is frequent, due to the occlusion of the olfactory fissure and degenerative changes of the nerve filaments. Cacosmia is usually present and often is very disagreeable and embarrassing to the patient.

The appearance of the pharynx may be that of pharyngitis sicca, covered with tenacious grayish membrane which can be removed in one large mass with a pair of forceps. Sometimes pus will not be present but the lateral pharyngeal folds will be markedly congested, showing there is an infection in the nasopharynx. On examination of the larynx the arytenoids will be infiltrated and probably some thickening of the cords noted. In chronic hyperplastic ethmoiditis the discharge may be scant or profuse; often microscopically pus is absent. Skillern says "Absence of pus proves nothing—its presence diagnostic."

Our first thought is to examine as much of the ethmoid capsule as possible, inspect the middle turbinate and the mucous membrane of the septum opposite the anterior end of the middle turbinate. One will see definite tissue changes if there is a chronic hyperplastic ethmoiditis present. Adrenalin should not be used in the same examination as it causes too much bleaching of the tissue; cocain is preferable.

A sinus may contain muco-pus and be transparent to the X-ray; the mucous membrane may be polypoid without secretions, and the X-ray may or may not show this thickening, but in the hyperplastic type it acquaints one with the anatomical outline, whereas, in the purulent type it will show the number of cells involved.

The diagnosis of chronic infection of the nasal sinus is difficult when little information is obtained from the history, when obstruction prevents a proper examination, or when little secretion is present.

The complications of ethmoiditis may be many, even in remote parts of the body. According to Daland, "infected tissue no larger than a split pea is sufficient to cause fatal systemic disease and no relationship exists between the amount of infected tissue and the seriousness of the secondary disease." When one considers the close proximity of the eye to the ethmoid sinus, the thinness of the lamina papyracea, the direct anastomosis of the blood vessels and in addition the optic nerve and its vessels against the wall of a cell for a part of its course, its chance of escape would seem rather slight. The most frequent form of complication arising from suppurative ethmoiditis is orbital abscess as a result of rupture through the lamina papyracea. Abscess formation can occur through the ethmoid veins without perforation of the lamina papyracea. The lesions of the eye which seem to be frequently associated with sinusitis are optic neuritis, iritis, corneal abscess, phlyctenular conjunctivitis and ulcer of the cornea.

The theory of infection of the bronchi may occur through the lymph vascular system or by direct inhalation. The association of sinus disease with bronchitis or bronchiectasis is too common to be accidental. Many cases of chronic bronchitis are treated over a long period of time without determining the etiology. Sinus infection and acute bronchitis may develop simultaneously since the etiological factors are often the same.

Lorring T. Swain, of Boston, has been specializing in arthritis for fifteen years and he thinks the infection of tooth sockets and tonsils is only a secondary focus of infection, whereas the primary focus originates in the nose and nasopharynx. Absorption from the intestinal tract is nothing more than we would expect, due

to the continuous swallowing of the secretions from the nasopharynx.

Reginald Burbank, of New York City, who has revolutionized the treatment of arthritis from the vaccine standpoint, insists that the primary focus of infection is from the sphenoethmoidal area.

We have been co-operating with Drs. Wescott and Hoover in following the combined treatments of Swain, Burbank and Pemberton, with special attention to the nasopharynx. In all of these arthritic cases we have found involvement of the ethmoid cells. In the preparation of his vaccine, Burbank requires specimens from the nose, nasopharynx, gums, tonsils and stools, the nose and nasopharynx being the most common foci of infection and the last to clear. Every case of infectious arthritis should, therefore, have a nose and throat examination in an effort to determine the focus of infection.

Sinusitis in infants will only be mentioned as it is not within the scope of this paper to discuss such an important subject. Pathological changes in the sinuses of children are the same as in adults. The symptoms are nasal discharge with obstruction with accompanying nasopharyngitis. Skillern believes the ethmoid sinuses are the most commonly infected in children, and all of these cases will show a general inflammation of the Schneiderian membrane. According to Dean, the maxillary sinus is the most frequently involved. He states that 85 per cent of the chronic cases of nasal sinus diseases have been cured by the removal of tonsils and adenoids without any other treatment. We all know that since attention has been given to tonsils and adenoids the sight of children with pus streaming from the nose is rare.

Treatment: Prophylaxis in general should be taught all patients in regard to head colds and the avoidance of forceful blowing of the nose when such a condition exists. We see few patients in the acute condition and the treatment would be that prescribed by the family physician. The patient should be ordered to bed and the body tissues depleted by free purgation. Sweat baths are often indicated. Ice-cap should be kept over the bridge of the nose and the usual prescription for colds given to make the patient more comfortable. If the above treatment is carried out, it will usually cut short the attack. Adrenalin in these cases has a tendency to aggravate the condition even though it gives temporary comfort. One attack of ethmoiditis usually predisposes to a second attack, and it is essential to have good drainage. After a few days, if purulent discharge is present, warm saline irrigations should be given and daily tamponing of the nose with some silver preparation, known as the "Dowling Method." One should not tampon the nose with a silver preparation immediately after using saline solution.

In the more chronic types anatomical obstruction should be corrected. When the middle turbinate is disposed of, the ethmoid capsule should be treated conservatively for several months before attempting to do radical surgery. In the meantime, we can continue to use some form of tampon treatment in conjunction with gentle suction to cleanse the cells. If the process continues unabated in spite of our treatment, then we will have to resort to radical surgery. What will we do? If the entire labyrinth is involved, complete exenteration of all the cells is indicated. This should be done carefully and systematically, because radical operations do not always mean radical cures.

Conclusions

First.—Headaches demand thorough investigations.

Second.—Patients suffering with recurrent colds should have a nasal examination.

Third.—The examination of a patient suffering with chronic bronchitis should not be complete without examination of the sinuses.

Shenandoah Life Building.

TUMORS OF THE SMALL INTESTINE—REPORT OF A CASE OF ADENOCARCINOMA.*

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and
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It is an interesting and unexplained fact that the large majority of all tumors of the gastro-intestinal tract are confined to the rather narrow limits of the stomach and colon. We may well regard it as fortunate that the twenty feet of small intestine contribute only a small relative number. However, tumors of the small bowels are more common

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than is generally supposed and are of more clinical importance than one would be led to believe from the meager space devoted to the subject in text-books of surgery and pathology. A discussion of their points of interest in the current medical literature supplies this deficiency to some extent.

Benign Tumors

Of the benign tumors we have: adenoma, lipoma, myoma and fibroma for consideration. This arrangement is in the approximate order of frequency. In a review of the literature on benign tumors of the small intestine Dewis[1] reports a case of fibroma of the ileum and cites forty-nine cases of benign neoplasm of the small bowel. Adenoma occurred fourteen times, lipoma seventeen, and fibroma only twice. However, he does not include many cases reported under such vague and unqualified terms as "polypus of the bowel," etc. Since many of the pedunculated polypoid tumors are adenomata, this group is likely more common than his figures indicate. They are probably the most frequent of the benign tumors. It is certain that fibromata are very rare. The term "polyp" is an objectionable one, particularly as a title for a paper. As recently pointed out by Erdmann and Morris,[2] it is commonly used to imply "any pedunculated or sessile intra-luminary growth varying in size from a pea to a grapefruit". Adenomata are not uncommon in the colon and rectum, where they are usually pedunculated and spoken of as "polyposis of the bowel". They are relatively rare in the small intestine, occurring only fourteen times in a total of 127 cases collected by Dewis[1]. Remarkable cases of diffuse intestinal "polyposis" are reported in which pedunculated adenomata are found throughout the gastro-intestinal tract from the stomach to the rectum. The adenomata are important because they are frequently the site of origin of carcinoma. Any of these benign tumors may occur at all ages. Some are probably congenital.

Spontaneous extrusion is an interesting phenomenon and occurs particularly in lipomata. Twenty per cent of Dewes'[1] cases were thus expelled. Extraordinary cases of intussusception are reported in which spontaneous recovery follows the sloughing and expulsion of several centimeters of the intestine to which the tumor is attached. The obstruction produced by these tumors is usually incomplete even when invagination occurs: hence the possibility of extrusion and spontaneous recovery. This will also account for the chronicity of the symptoms.

These benign growths may long remain unsuspected giving few or no symptoms until intestinal obstruction or intussusception occur. Even these attacks may end by spontaneous recovery only to recur. In other cases symptoms of flatulence, constipation or diarrhea, or both, with spells of vomiting over a long period are described.

Malignant Tumors

Sarcoma. — Of the malignant tumors we have only sarcoma and carcinoma. While all types of sarcomata are reported, lymphosarcoma is most commonly encountered. Among ninety-nine cases Speese[3] found them distributed as follows: Lymphosarcoma thirty-four; round-cell sarcoma forty-three; spindle-cell sarcoma thirteen; fibrosarcoma three; mixed-cell sarcoma one; myxosarcoma two; melanotic sarcoma one. As Speese remarks, many cases diagnosed as round-cell sarcoma probably belong to the lymposarcoma group. The number of the round-cell group is then probably too high and the lymphosarcomata too low in the above figures. Sarcoma appears to be much less common than carcinoma. Bringing the literature up to date, Speese was able to find a total of only 101 cases in 1914.

Sarcoma is usually found in the lower ileum but may appear in any portion. It is even less frequent in the large than in the small bowel. We have seen one case in the wards of Grady Hospital (1924) of lymphosarcoma of the caecum. The primary tumor, removed at autopsy, was about the size of an egg. There were a few metastatic nodules on the intestinal coils and several cutaneous glands were enlarged. One of these was removed during life and showed lymphosarcoma.

Sarcoma begins as a localized thickening in the muscularis or submucosa which spreads between the layers usually leaving the mucosa intact. Ulceration often occurs but stenosis is uncommon. As the growth proceeds with thickening of the wall of the gut there may be excavation by ulceration within until the tumor presents a fusiform or aneurysmal di-

latation. This resemblance to an aneurysm has been noted by several observers. The main tumor in the case here presented is of this type although it is a carcinoma.

Sarcoma may occur at any age. Sterne's case, cited by Libman[4], was present at birth and caused intestinal obstruction of which the infant died when five days old. While metastases are rare in the spindle-cell variety, they are often widespread in lymphosarcoma. Cases in children are said to metastasize early. Libman[5] reports a case with metastases in numerous organs including the heart muscle. Intussusception occurred fourteen times in

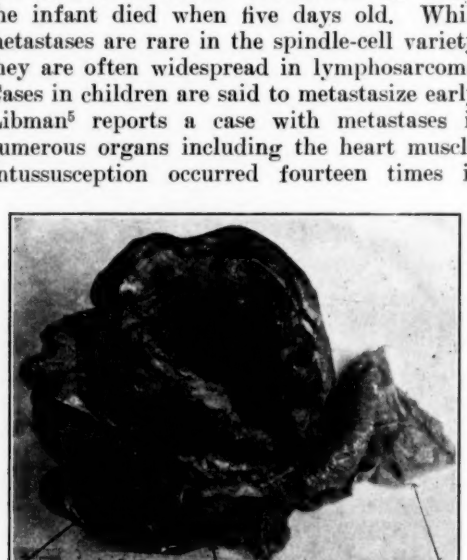

Fig. 1.—Multiple primary carcinoma of small intestine showing large ulcerating tumor and three smaller ones, with intussusception.

seventy-four cases which had been operated upon (Speese). Perforation is rare but has occurred. The growths are usually single but may be multiple.

Grossly, sarcomata are softer than carcinomata and often contain minute areas of necrosis or even gross caseous spots resembling tuberculosis. This confusion with tuberculosis has occurred both ways. The association with syphilis has also been noted, but is probably only incidental. In lymphosarcoma, microscopically the wall of the bowel is diffusely infiltrated with lymphoid cells, while the main tumor is made up of masses of deeply stained lymphoid cells. There is a soft, delicate, reticulated stroma with a moderate number of thin walled blood vessels.

As the symptoms and treatment of all malignant neoplasms are essentially the same they will be discussed together a little later.

Carcinoma.—The remarkable freedom of the small intestine from carcinomatous neoplasms is emphasized when we recall the frequency of cancer in the stomach and colon. Judd[6] found during the same period at the Mayo Clinic only twenty-four cases of carcinoma of the small intestine as contrasted with 1,822 of the colon and rectum, and 1,689 of the stomach. This is less than the usual relative frequency. It is usually stated to represent about 3 per cent of intestinal cancer. Ewing[7] states that about 8.5 per cent of all cancers occur in the intestinal tract; of this number 2.5 per cent are found in the small intestine. It increases in frequency as the stomach is approached above and the colon below.

More cases involve the duodenum than any other portion. In the twenty-four cases reported by Judd[6], it was found five times in the duodenum, eleven times in the jejunum and six times in the ileum. In two cases the growths were multiple. It often develops on papillomata or "polyps", differing in this respect from carcinoma of the colon.

Carcinoma of the duodenum occurs as three well defined types: (1) Of the first portion following ulcer, (2) of the ampulla of Vater, and (3) as carcinoma of the third portion. About 70 per cent of the duodenal cases occur at the ampulla (Judd). Here they are often times papillomatous in type and frequently cause biliary obstruction. The definite relationship of ulcer and carcinoma here, as in the stomach, though probable, is still unproven. In the third portion, annular constricting lesions are found, giving the symptoms of pyloric obstruction. Misplaced islands of pancreatic tissue also give rise to carcinoma in this region.

In the jejunum and ileum, carcinoma arises from degenerating pedunculated adenomata, or less often as an annular or ring carcinoma. There is also a group of carcinoid tumors described by Lubarsch (Ewing). They are multiple, slowly growing, non-metastasizing tumors, and usually cause few or no symptoms. They may give rise to true carcinoma.

Metastasis is not common in carcinoma but does occur usually by direct extrusion. Judd[6] mentions one case having a metastatic nodule in the liver. Intussusception and obstruction occur and are often a cause of death but, as noted in the other tumors, obstruction is often

incomplete and recurrent. Ascites is said to be more often associated with carcinoma than with sarcoma.

The microscopic picture is that of an adenocarcinoma or columnar cell carcinoma arising from the cells of the mucosa.

The symptomatology of these tumors is varied and diagnosis is difficult. However, a fairly definite clinical picture can be made out in many cases. The benign tumors may give no symptoms of their presence or only vague "intestinal indigestion" until intussusception occurs. In sarcoma and carcinoma, however, there is often the picture of chronic intestinal obstruction with recurrent attacks of cramp-like pain, distention, vomiting and audible intestinal gurgling and rumbling. Visible peristalsis may be observed. Constipation with attacks of diarrhoea may be present or either may occur alone. Loss of weight, weakness and progressive anaemia are fairly constant. A tumor in the abdomen is rarely noted as the first symptom. The duration of symptoms, while occasionally as long as three to four years, or as short as four to six weeks, is usually from three to six months. When located in the duodenum, symptoms of pyloric stenosis may be present with gastric stasis and vomiting. Jaundice may of course be found when the ampulla is involved. Adhesions to other structures often cause symptoms not related to the intestinal tract, as painful and frequent urination from pressure on the bladder. Even renal colic may be simulated, as in a case reported by Libman[5]. The palpation of an easily movable tumor in a patient with these symptoms is a diagnostic feature of importance. This was particularly true in the case here reported. However, because of their free mobility they may not be palpated until a rather large size is obtained.

X-ray of the gastro-intestinal tract helps to limit the lesion to the small intestine by ruling out pathology in the stomach and colon. In some cases the dilated intestinal coils with the valvulae conniventes are plainly visible. Or large accumulations of barium in the region of the small intestine in the six hour film may be seen. Occasionally irregular streaking and smearing of barium is observed in the small intestine.

Occult blood is often found in the stools but the gastric analysis rarely helps to establish the diagnosis.

The age incidence in carcinoma is about the same as in cancer elsewhere. In Judd's[6] cases, the average age was about fifty years. Sarcoma tends to occur earlier in life and is often found in children. The treatment will depend entirely upon the individual case. Single benign tumors may be cured by simple resection and this should always be done to prevent possible malignancy. Resection of lymphosarcomata has been followed by apparent cures. Douglas[8] reports a well authenticated case who was living and in good health five years after operation. Many cases have lived two, three and four years. However, recurrence is stated to occur in 95 per cent of sarcoma. Resection should also be done when possible in carcinoma as metastasis is less frequent and occurs later than in sarcoma. Cases of carcinoma are reported to have lived ten years after radical excision. Judd[6] states that regional metastasis in the lymph nodes is no contraindication to resection. However, in cases with obstruction and in poor surgical risks, an enterostomy must be done first and the operation completed at another sitting.

Radium is probably of little value but X-ray therapy has been advocated by many, especially in lymphosarcoma. In advanced cases and multiple lesions, only palliative measures to relieve symptoms may be undertaken. Libman[4] advocated the use of arsenic in all cases of lymphosarcoma but it would seem to be of doubtful value.

Report of a Case

This patient, a white female domestic, age 44 years, entered St. Joseph's Hospital, October 31, 1925, with a chief complaint of nausea and vomiting.

The *family history* was irrelevant.

The *past history* showed that she had had typhoid fever at the age of 15, influenza in 1919 and again in April, 1925. There were no other significant symptoms except as mentioned in the present illness.

During the past five months her menstruation had been irregular. She married at the age of 26 years, had eight children living and well. She had had one miscarriage. Two years ago she had a non-malignant pigmented mole removed from the back.

Present Illness: She had had an extremely poor appetite, "indigestion" and constipation for the past two years. She dates the

onset of her present illness from an attack of influenza in April, 1925. Shortly after this she began to have spells of nausea, vomiting, and cramp-like pains in the abdomen. A little later she noticed a mass in the left side of the abdomen which had gradually increased in size. She continued to grow worse, the nausea and vomiting increased. She complained of a throbbing pain in the left side of the abdomen, burning sensation in the stomach and headaches. She also noticed some yellow splotches on the neck and face and became extremely weak, nervous and lost some weight. There was light dyspnoea on exertion and cough without sputum or hemoptysis. She had nocturia, two to three. There had been no hematemesis or rectal bleeding. Previously she was treated at another hospital, September 14, 1925, where the mass was thought to be an enlarged spleen. The blood and spinal fluid Wassermann were strongly positive and she was put on anti-syphilitic treatment without improvement. She remained in this hospital thirteen days. The blood count then showed 3,690,000 red cells, hemoglobin 60 per cent, 9,950 white cells, with a normal differential count. The urine was negative. X-rays were taken of the genito-urinary tract, gall-bladder and a gastro-intestinal series. These showed the stomach and colon to be negative. The kidneys were well outlined. No gall-stones were found. In the left side of the abdomen was a fairly well outlined soft-tissue mass extending from the costal arch to the crest of the ilium. It was of varying density, distinct from the kidney, and apparently contained gas.

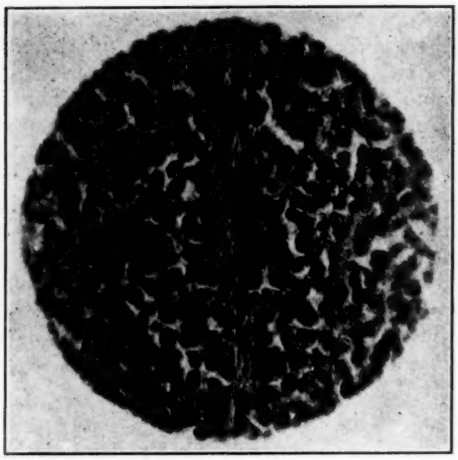

Fig. 2.—(High Power). Structure of large tumor and several smaller ones.

Physical Examination: The patient was well developed but undernourished. Face pinched and pale. Mucous surfaces appeared anaemic. The eyes, ears, nose and throat were negative. Heart and lungs showed nothing remarkable. Blood pressure 118/80. The abdomen showed a slight fulness in the upper portion but there was no visible tumor. Palpation revealed an extremely tender and freely movable mass lying to the left of the umbilicus and extending from the costal border to the crest of the ilium. It was about the size of a large grapefruit. It was not only freely movable on palpation but shifted from the region of the umbilicus to the left flank with change of position. There was also some tenderness in both lower abdominal quadrants. The vaginal examination showed a foul purulent discharge, palpable Bartholin's glands, an eroded cervix and some infiltration in both fornices with tenderness on the left. Rectal examination was essentially negative. There was now 50 per cent hemoglobin, 2,800,000 red cells, and 7,800 white cells, with 74 per cent of polymorphonuclears. The nausea, vomiting and abdominal pain continued, she grew weaker and cachetic and died December 3, 1925, after one month in this hospital.

Necrospy was obtained only after the body had been embalmed, and was limited to the abdomen. The peritoneal cavity was opened by an incision from the ensiform cartilage to the symphysis pubis. The peritoneum is smooth and glistening. There is no free fluid in the cavity. The spleen is of normal size. The appendix is normal. The mesenteric lymph nodes are not enlarged. The liver seems to be slightly enlarged, but does not reach below the costal margin. The liver is pale yellowish in color, presenting quite an unusual appearance. This may be due, however, to the embalming fluid. Lying directly over the left kidney, is a large mass the size of a small grapefruit. The small bowel can be seen to enter the mass above and to emerge below. It is therefore a tumor of the small bowel. The transverse colon is adherent to the upper border of the mass, but does

not communicate with its cavity. The descending colon is attached to the mass laterally by fibrous bands. Going through the coils of the small intestine below this mass, there are found four other tumors involving the wall of the small intestine. They are of varying sizes all the way from slight induration the size of a coin up to a mass the size of a lemon. The continuity of the bowel is not disturbed by any of these masses. At other points, polypoid masses the size of an egg are found within the lumen of the small bowel, which do not involve the wall of the gut, but seem to arise from the mesenteric border. At two points there is beginning intussusception. The entire gastro-intestinal tract was removed from the pylorus to the rectum and preserved in the anatomical position.

Pathological Report by Everett L. Bishop, M. D.*

Specimen: Small and large intestine: Preserved in sugar solution, after formalin fixation.

In the jejunum is a large mass, the size of a large grapefruit, through which the intestine goes. The mass is firm, rounded, and slightly nodular. The tumor cuts easily, revealing a smooth surface which is quite cellular, the center of the tumor showing the lumen of the gut, which is bile stained. There are no gross areas of necrosis or hemorrhage. There is no perforation. This mass is high up in the jejunum. Scattered along the intestine at various intervals are nine other tumors, four or five of which involve the intestinal wall, the others being well developed polypi. In two places, there is definite intussusception, without however, complete obstruction. The last polyp is near the ileocaecal valve.

Sections of the various tumors show a very interesting structure of a diffuse epithelial growth, the cells being large and medium sized spindle, rounded and polyhedral cells, with abundant cytoplasm, acidophile in reaction, and showing a relatively large and hyperchromatic nucleus. These cells appear in sheets, narrow, and also bulky strands, separated by narrow strands of connective tissues. In many areas there is a definite tendency toward alveolar formation. Mitoses are quite numerous, and the vascularity marked. There are no areas of necrosis or other regressive change. Desmoplasia is lacking. Adjacent to one of the medium sized tumors, there is hypertrophy of the mucosa with marked epidermoidization of the epithelium of the glands, without however, marked proliferation. This is probably of inflammatory origin and not part of the general tumor process.

Fig. 3.—Inflammatory changes in the mucosa near tumor. Marked epidermoid changes in glandular epithelium without proliferation. Intense round cell infiltration between glands.

The above described structure appears not only in the large tumor of the upper jejunum but also in the smaller tumors lower down. The structure is definitely that of a malignant neoplasm and, without evidence of a malignant tumor elsewhere, must be taken as a multiple primary diffuse carcinoma of the small intestine. It is impossible to say whether the tumors were malignant at the beginning, or whether they began as benign polypi. It is possible that the original structure was that of adenocarcinoma, but the loss of growth restraint and increasing malignancy gives a more diffuse picture, where the tendency toward glandular formation is lost and replaced by a diffuse growth with only a slight tendency toward poorly formed alveoli.

Summary

A case of multiple primary adenocarcinoma of the small bowel is reported.

*Pathologist Albert Steiner Ward for Cancer and Allied Diseases.

The incidence, etiology and symptomatology of tumors of the small bowel are discussed. From the careful study of a case keeping the symptoms in mind one should be able to make the diagnosis more often than is usually the case.

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1010 *Medical Arts Building.*

SQUAMOUS CELL EPITHELIOMA OF THE BODY OF THE UTERUS—REPORT OF A CASE.*

By ARTHUR C. SINTON, JR., A. B., M. D., Richmond, Va. Associate in Gynecology, Hospital Division, Medical College of Virginia.

There are statistics that show that the uterus is first in the list of organs affected by primary cancer. Welch collected over 31,000 cases of cancer from the literature, of which 29.5 per cent were of the uterus and 21.4 per cent were of the stomach. Later figures show a predominance of cancer of the stomach and liver over cancer of the female generative organs. The uterus is still probably the most frequent seat of the disease in women. About 10 per cent of uterine cancers affect the corpus.

The frequency of uterine cancer is explained partly by its anatomical and physiological charatceristics, especially its exposure to trauma and irritation. Cervices that have been repeatedly lacerated at childbirth, those that show a chronic endocervicitis and erosions are those that are prone to the development of malignancy. An etiological factor in the development of corpus carcinoma is the association with myoma, 10 per cent of which are combined with carcinoma.

The two main histological and clinical divisions of carcinoma of the uterus are, of course, squamous cell carcinoma of the cervix and glandular carcinoma of the body.

*Read before the Richmond Academy of Medicine, Richmond, Va., February 22, 1927.

Ewing gives the following histological varieties of carcinoma of the body:

1. Malignant adenoma.
2. Papillary adenocarcinoma.
3. Alveolar carcinoma.
4. Adeno-acanthoma.

The first is the usual type; the second is a form assumed by certain tumors which probably arise from adenoid or polypoid forms; the third is rare, but some tumors show solid masses of cells forming alveoli and smaller cell groups infiltrating spaces and vessels. These structures are more aggressive than the malignant adenoma and are subject to degenerative changes which may lead to the diagnosis of round cell sarcoma. About the fourth variety which is the one under which our case has to fall, Ewing goes on to say that squamous cells may form a prominent element in adenocarcinoma of the corpus and in rare cases they predominate over the glandular structure and produce a true adeno-acanthoma. In some cases spine cells and keratohyaline granules, the criteria of true squamous epithelium, are present and also pearl formation. Very rarely all the characters of adult acanthoma are observed.

It is, of course, true that carcinoma usually is of the type of epithelium from which it arises, and it is for this reason that primary squamous cell carcinoma of the uterus is such a rare tumor. The cavity of the fundus is normally lined with high ciliated cylindrical epithelium, and carcinoma arising here is almost invariably of the glandular type.

The rarity of squamous cell carcinoma of the fundus is well shown by the fact that Cullen at the time of the publication of his book on carcinoma of the uterus was able to find but three authentic cases of this condition and had himself never seen a case.

Since that time, however, this type of tumor has attracted considerable attention, especially in Germany, and a number of cases have been reported.

Gebhardt, in 1892, was the first to report a case of primary squamous cell carcinoma of the fundus. Since then cases have been reported by Fraischlen, Kaufmann, Batchelor, Keith and others.

C. C. Norris, of Philadelphia, writing in the *American Journal of Obstetrics*, Vol. 56, No. 6, pg. 87, reports a case and reports work of others. Very free reference has been made

to his article in the presentation of this case.

In explanation of the origin of this tumor various theories have been advanced. The squamous epithelium of the portio-vaginalis normally ends at the external os; above this point the canal is lined by columnar ciliated epithelium. The meeting place of these two types of epithelium is not a fixed point, however, and it has been thought that a very high extension upward may in some cases account for an epithelioma of the fundus. This seems probable in those cases originating in the lower part of the body, but could hardly account for a localized growth occurring at the fundus and surrounded by normal endometrium.

An extension upward of a cervical carcinoma would account for epithelioma in the fundus but in this case the cervix is not diseased.

Squamous or keratoid changes may take place in the epithelium of the body of the uterus, such changes occurring independently of a new growth. Leukoplakia uteri is a term often applied to this epidermization of the endometrium. It may occur after curettage, especially when the uterus has been treated with escharotics. It is reasonable to suppose that malignancy developing in such an endometrium would have the characteristics of an epithelioma.

Finally, since islands of squamous epithelium may occur in the normal fetal endometrium, it may be assumed that its occurrence in the adult is sometimes only a result of such early malformation.

No one of these theories satisfactorily accounts for all the cases.

The history of the case I have to report is as follows:

Miss M. S., age 57, white, nulliparous.

Family history good.

General previous history. Has been a healthy woman, never having had a serious illness.

Menstrual history.—Started at 14, regular every 28 days. Flow would last about a week and was somewhat too profuse. Dysmenorrhoea always present. Menstruation ceased in 1917 when she was 48 years old. After this there were several periods at irregular intervals with a scanty flow.

In 1917, a "D & C" was done, it being stated that she had catarrh of the womb.

Present illness.—She began bleeding from the vagina in April, 1925. The bleeding was quite profuse and was constant. She was referred by her physician to Dr. E. L. Flanagan for X-ray treatment.

Dr. Flanagan kindly gave me the following data about her treatment: "She was given treatment through three apertures, one in front, through the sacrum, and through the perineum. The first series of treatments was given May 23, 25, 26, 1925, the second June 22, 23, 24, the third August 6, 7, 8, the fourth November 11, 18, 19, the fifth April 19, 20, 21, 1926, and the sixth May 18, 19, 20, 1926. The patient was rather irregular in reporting for treatment after November, 1925. This was accounted for by the fact that she was made very sick after the treatments. The technique used in treatment was as follows: 136 KV, 5MA, 16" distance, ¼ mm. copper and 1 mm. aluminum filter, 35 minutes time."

The treatments alleviated the bleeding considerably.

Three months after the last treatment bleeding started profusely again.

She was admitted to the Gynecological Service at the Memorial Hospital, July 2, 1926.

Examination showed a rather emaciated looking woman, weight about 95 pounds. Several carious teeth and some pyorrhoea noted. No abnormal heart sounds heard, lungs clear. Some tenderness over lower abdomen but no masses noted.

The odor from the vaginal discharge was such as to make neighboring patients object to her presence.

Urinalysis was negative except for a trace of albumin and an occasional hyaline cast, and a few leucocytes.

Phenolsulphonphthalein functional test was 40 per cent for two hours. She had a hemoglobin of 70 per cent, 9,000 white blood cells, 74 per cent polys, 26 per cent lymphocytes, Wassermann negative.

Vaginal examination. Vagina admits one finger, cervix is short, very soft, and admits index finger. The fundus is slightly enlarged, is anterior and freely movable. The adenexal regions are apparently clear. There is a very foul bloody discharge noted. Some organized material protruding from the cervix was obtained and sent to the laboratory but this

turned out to be infected and degenerated blood clot.

A diagnostic curettage was done July 16, 1926, and the following report received:

"Gross description: A number of pieces of glistening uterine scrapings.

"Pathological diagnosis: A frozen section made from some of the larger pieces strongly suggests a stroma-cell sarcoma of the uterus, probably arising from the interstitial or stroma cells of the endometrium with some invasion of the adjacent muscle."

Supplemental report following a preliminary report on frozen section made July 16, 1926:

"The glandular element here is overshadowed by an overgrowth and apparently invasion of stroma cell groups into the uterine muscle. Several islands of cells suggesting 'epithelial pearls' of squamous cell epithelioma are seen but they are not in sufficient number here to be of value in diagnosis.

"Note: This type of malignancy is infrequent and its degree not well known but, if the condition of the patient will justify it, I think that a complete hysterectomy at an early date ought to be done.

"Pathological diagnosis: Apparently from the uterine scrapings submitted for diagnosis we are justified in calling this case one of sarcoma of the uterus, originating probably from the stroma cells of the endometrium."

The patient was operated on August 3, 1926, a complete hysterectomy being done.

Dr. Phillips reported on the specimen as follows: "Specimen consists of uterus, both tubes and a small cyst. Uterus has been completely removed. Cervix is hard, small and apparently normal except for some hyperemia. The body is of normal size and consistency except posteriorly where there seems to be a firm area in the wall. When cut open there is a large fungoid yellow and red mass adherent to the upper posterior wall, measuring 4x3.5x2.5 cm. There is also a smaller sessile mass adherent to the wall near the origin of the left tube and measuring 12x12x5 cm. Two pieces of the mass were loose inside the uterus and measured approximately 2x3x2 cm. Both tubes were grossly normal except for external congestion. The cyst measured 3 cm., and is apparently serous in character and from the ovary.

"Microscopic description: Sections of the growth show a typical squamous cell epithelioma with some pearly bodies in places and in general the cellular arrangement so often seen in epithelioma of the cervix. The cells are free growing and have invaded the uterine wall apparently a short distance. The growth seems limited to the fundus and this type of malignancy is rare there. Sections of the endometrium lower down show no epithelioma. The former tentative diagnosis of stroma cell sarcoma of the uterus is now replaced by this final report.

"Pathological diagnosis: Final and conclusive report—completing all others:

"Epithelioma (squamous cell) of the fundus of the uterus; normal Fallopian tubes; serous cyst of the ovary.

CHARLES PHILLIPS, M. D.,
Pathologist."

Her post-operative convalescence was uneventful and she left the hospital September 4, 1926, in excellent condition. We have had the opportunity to follow her subsequent course rather closely, and while, of course, it would be foolish to talk of a cure at this early date, we cannot help but be hopeful.

I wish to thank Dr. Charles Phillips for his interest in this case which made its report possible.

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ERRORS OF REFRACTION AS A CAUSE OF NERVOUS SYMPTOMS.*

By CLIFTON M. MILLER, M. D., F. A. C. S., Richmond, Va.

The importance of eyes as organs of vision and attempts to improve failing or deficient vision are no new things in medicine. Nero is said to have used a reading glass made from a great emerald. Rabelais, monk and scoffer, was also a doctor of unusual training and ability, bringing to this profession the keen and observing mind that made him the greatest literary light of his time with the exception of Calvin (1532). One of his characters, Panurge, I think it was, is made to say that all the organs of the head except the eyes could have been placed elsewhere in the body without detriment to their usefulness, but the eyes must be placed in the highest portion of the body so that a com-

*Read before Stuart Circle Hospital Clinical Club, Richmond, Va., April 13, 1927.

manding view of the surroundings might be obtained, just as the watch towers of a castle were always the highest part.

There is no muscle of the body with the exception of the heart that is in such a state of constant functional activity as the ciliary muscle. During every waking moment the focus of the eye is constantly varying as one looks from distant to near objects, and the ciliary muscle is the power that brings about this constant change of focus. Helmholtz is credited with having said that were an optical instrument with as many defects as the human eye submitted to him he would reject it. This sounds unreasonable when we realize that the human eye is the only optical instrument whose focus ranges from infinity to a few inches and this focus changes instantly as the necessity arises.

Giving consideration to the enormous use to which the human eye is put and its importance in every act of our lives, it seems strange that its activity as an optical organ was alone appreciated while its influence as a factor in upsetting the function of the nervous system was not thought of until comparatively recently. To S. Weir Mitchell more than to any other man is due the honor of directing the attention of ophthalmologists to this phase of the eye as a cause of headache and various functional nervous conditions.

Parallel rays of light entering the normal eye come to a focus upon the retina. In man binocular single vision is the normal state and when his eyes look to infinity the axes of vision of the eyes should be parallel with the intrinsic and extrinsic muscles of the eyes at rest or practically so. Any departure from the above outlined condition may give rise to trouble which is most frequently ascribed to parts far distant from the eye.

Binocular single vision with normal acuity (or what is usually spoken of as 20/20ths vision) may be obtained by eyes that are far from normal in their refractive condition or muscular balance. Indeed, it is the eyes with good vision that cause the trouble when there is in them a refractive error, for they are kept constantly upon a strain to retain the good vision and obtain no rest even when looking at distant objects; some of these eyes are not rested even during sleep, for the constant strain produces a spasm of the focussing muscle which does not completely relax during this time.

It is very commonly stated that eyes are weaker now than when man was living a more primitive existence. This is probably not true, but the exigencies of modern life make a greater tax upon the eyes; therefore, the train of symptoms which they cause is more pronounced. Then, too, the importance of the eyes as a causative factor in human suffering is more fully appreciated; hence, more frequently looked for and corrected. The fact that a large number of its members wear spectacles in early life is not a reflection upon the hardihood of a people but a tribute to its intellect, the percentage of spectacle users being greatest in the most intellectual races.

Eye-strain may cause symptoms referable to the eye alone, such as recurrent styes, blepharitis, chronic conjunctivitis and meibomian cysts of the lids. Such symptoms would be apt to cause eye examination. Headache is the most frequent symptom found with eye-strain as the cause, but there is no absolutely typical headache produced by this cause. The most frequent is perhaps the afternoon pain in the brow with feeling of constriction about the head, this coming on after prolonged use of the eyes for near work, riding on the train, sight-seeing, theatre going, etc. Headache, however, may come in paroxysms with a week or more interval between attacks; the so-called bilious headaches of a few years ago were in most cases of this type. It has been said that headache upon arising in the morning has not eye-strain as its cause. In the main this statement is true, but there are many instances of severe headache upon arising in the morning being produced by unusual strain the day or evening preceding. The onset of the headache of eye-strain is in no way typical; there may be prodromata, such as scintillating spots before the eyes, photophobia, temporary loss or reduction of vision, or nausea, or it may come suddenly with no premonitory signs. No case of constant or regularly recurrent headache should be considered as having had its etiology fully investigated until the eyes have been proven without fault in the causation. Even when other factors quite sufficient to account for the headache are present, still the eyes may be contributing their quota to the suffering.

Digestive symptoms are probably next in frequency to headache. These may be of varying types from recurrent attacks of nausea and vomiting to severe intestinal cramp. Constipation is not infrequently a result of eye-strain, and cases are not unusual in which the careful correction of an error of refraction has resulted in relief of this condition without any change in the patient's diet or habits being made.

Insomnia is frequently caused by eye-strain. On the other hand, there are some people with an uncorrected error who, when they start using their eyes for near-work, cannot keep awake. Cases diagnosed as epilepsy, both petit and grand mal, have been reported as resulting from errors of refraction. Errors of refraction or muscular imbalance of the eyes are not infrequently the cause of lateral curvatures of the spine or malpositions of the head, the child finding that by assuming certain twisted positions of the head or body the text of books upon its desk can be seen more plainly.

In hysteria eye-strain is no doubt frequently the underlying cause that produces the nervous imbalance which results in various fuctional disturbances of this kind. I recall the case of a young dressmaker who used to have frequent attacks of hysterical aphonia. These would come without warning once every six weeks to three months and last two or three days. In three attacks she consulted me and, after the third one, her eyes were carefully examined, and a marked error or refraction found. Glasses to correct this were given her and for three years she had no more attacks; since that time I have not seen her.

Children who are highly nervous and irritable in school and who do not progress as they should will frequently be found to be suffering from eye-strain. The correction of errors of refraction in such has resulted in entirely changing their disposition and school progress. Many a child has been called dunce and incorrigible when a proper pair of glasses would have rendered him bright and tractable.

Cases of nervous exhaustion, nervous prostration and so-called brain fag should not be considered fully investigated until the refractive condition and muscular balance of the eyes is known, and if error is found, a most careful correction should be made. In studying the possibility of the eyes being the cause or a contributing factor in some functional or painful condition under consideration, too much weight must not be given to two statements that are frequently made by patients: One is, "Doctor, I see perfectly for every purpose and have never had any trouble with my eyes", and the other, "Doctor, I have glasses". Both of these statements are undoubtedly true and given in good faith, but should be carefully weighed. If the patient has glasses, how were they given? Were the eyes carefully examined with mydriatic and, if so, how long ago? Is the physical fit of the glasses good and do they meet the present needs of the patient? A glass should not be given, particularly to young patients, without a careful examination of the eye under a mydriatic, for the constnt change of the focal distance in the eye whose focussing power has not been eliminated makes correction of the error highly difficult, if not impossible. It is not an unknown occurrence to find a patient who has been examined without a mydriatic wearing a minus glass when a plus correction is what he really needs. Of the first statement mentioned above, it can be said that perfect vision is by no means infrequent, with a marked error of refraction, and it is in such patients that the most marked nervous symptoms are produced. Their eyes are never at rest during any waking moment and the amount of nervous energy required to keep this up is enormous.

The onset of the time of presbyopia (40-45 years) may give rise to nervous symptoms in a patient who has eyes absolutely free from any refractive error or muscular imbalance if he delays too long the using of glasses for near work. Such patients frequently depend upon a greater intensity of illumination and putting the object further from them to put off the time of using glasses, and in doing this cause other troubles that are far more annoying than the use of glasses.

In studying the question of eye-strain and its effect upon the individual, the character of the occupation should receive consideration as well as the temperament of the person doing the work. A laborer or one whose occupation has little near-work in it will not be as profoundly affected by a small error of refraction as will one whose work requires constant near-vision. Again, a person of a

phlegmatic disposition with nervous system not easily upset by the stress of his work will have no symptoms from an amount of eye-strain that would produce almost unbearable suffering in one of nervous disposition who does not bear well the strains of daily life.

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SOME POINTS IN THE TREATMENT OF FRACTURES.*

By CLAUDE MOORE, M. D., Roanoke, Va.

I have nothing new to add in the treatment of fractures, but only expect to emphasize certain points that are frequently ignored or forgotten, since the treatment of fractures is one branch of surgery where carelessness will bring disastrous results both in cures and the number of lawsuits for damages for poor results. The first thought in the treatment of fractures is to be sure that you have an accurate diagnosis, even in the details. The reason of my discussion of this subject is an incident that happened to me a few months ago, that most of you would imagine would never happen. I was called to see a patient nine years old that gave a history of hurting his leg while scuffling at football two days before. The leg was markedly swollen, red and tender, and after complete examination, I found he had a fracture of the femur just above the middle. Another physician had seen him the day before, and, after examining the boy, told his father that he had a sprained leg, advising hot applications, and giving him a prescription for some liniment to apply, telling the father the boy would more than likely be all right in a few days. This physician who is slightly beyond middle age, with a fairly active practice, I consider an average one in his profession, and I believe thoroughly sober. I would never have believed that any registered physician in the State of Virginia, would have missed making the diagnosis of a complete fracture of the shaft of the femur. I took the case to the hospital, and X-ray showed a long oblique fracture through the upper portion of the shaft. Because of the swelling due to lack of twenty-four hours' treatment, this physician, through carelessness, had missed the diagnosis, when there was over two inches of shortening. Even today I suppose he thinks the boy had a sprain.

Average care of the correct kind in the treatment of fractures will produce good results. Scudder says that only a little over 2 per cent of all fractures of any kind after proper treatment will show failure to unite. All of us know many causes of delayed or non-union in treating fractures, but one of the points I want to discuss is a faulty blood supply in long bones. All text-books discuss at length poor blood supply in fractures where the vessels have been injured in an accident. I want to call attention to the possibility of poor blood supply in simple fracture where the blood supply has been lessened before the injury. This frequently happens where there has been previous injury or disease in the extremity, often an old phlebitis. In rarer conditions there may be pressure of tumors on the larger vessels proximal to the fracture. In more frequent cases there is an endarteritis or an arterio-sclerosis. This condition is more serious than a minor injury to one of the vessels, because there is little likelihood of a collateral circulation. Recently I had such a case that looked for many months like a case of non-union. In all cases where there is a possibility of retarded circulation, all methods of increasing the blood supply must be used. These are too numerous and familiar to be mentioned, but in my opinion the one of most benefit is constant or intermittent elevation of the extremity. In looking up the treatment of poor nourishment in treatment of fractures, I could not find that Scudder in his treatment of fractures, in the new edition just out, had mentioned either endarteritis or arterio-sclerosis as a cause of delayed or non-union. It was almost certainly the cause of a case I am going to report.

Another point that I want to take up in the treatment is that of immobilization. In all of our average cases, all of us, I suppose, try to get the fracture in splints or casts as soon as possible or practicable, with the best possible position under the circumstances, and keep it so until there is good union. But, suppose there is no union, and we have remedied or removed all known causes of non-union, what next? Before operative measures are attempted, such as bone graft, loosening the splints will cause growth of new bone to be started. Sometimes new splints or casts

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will have to be made to allow pressure to be made at the ends of fragments. Thus, by irritation at the point of the fracture new bone will possibly begin to be formed. Recently in a case this suggestion was offered by Dr. Wescott, with slow but good results. Care must be exercised that the fracture is well supported with splints or other means to prevent further injury or complications.

Another thing that is often seen is the average physician trying to get a beautiful or good anatomical result rather than a good functional result. I have seen cases where continual attempts have been made to get a perfect alignment of fragments even after union has begun. This is permissible in the first week in a few fractures in exposed places where the patient's professional or social life is such that a poor anatomical result would be a serious handicap, but in most cases an ideal cure should be attempted more for a strong bony union than to restore the perfect anatomy. Especially is this true in this age of rapid or high pressure living, where the average industrial man is living up to the limit of his salary, and too frequently with this instalment buying his pay is spent weeks before he makes it. In these cases, with the physician trying to satisfy his aesthetic taste with a perfect anatomical cure, the patient will be kept from his job a few more weeks, thereby losing what little he is buying by installments, and paying his accumulated debts with bankrupt notices. Especially is this so in the present day when the doctor treating the case can look to insurance companies or industrial corporations for his fee when the case is discharged. Due to increased accident, automobile, and industrial insurance, physicians are little handicapped in the costs of the treatment of fractures.

On the other hand, because of the difference in the osteogenetic power in different bones in different people, the physician should not err on the opposite side. Often presupposed non-union will only be delayed union. Temptation is great to attempt surgical interference, such as bone grafts, plates, etc., thereby converting delayed union into non-union, or delaying the return of the patient to a gainful occupation. Judgment of the treatment to be administered is of far more importance, except in very unusual circumstances, than the technic of applying the procedures. Due to our war experiences, many extremities are now saved which would have been sacrificed. In a base hospital in France I have irrigated and dressed compound fractures of the femur for months at a time, later to get a useful leg with only a slight limp due to shortening.

Lastly, I want to discuss a condition that does not apply entirely to fractures alone, but certainly to as great or greater extent than in any other accident, namely, the financial or economic side of accidental injuries. Virginia is falling rapidly behind many states and some of the countries in Europe in the provision for the care of a person and his dependents when he is injured at his regular vocation, often through no fault of his own. It is the duty of the physician who is most intimately associated with the patient to see that this is remedied. As you know, a man injured at his regular job is entitled to half of his regular weekly pay, up to $12, after the first ten days, which are exempted, and the employer or insurance carrier pays all expense of treatment. He can collect for the first ten days after injury if he is incapacitated for forty-two days. Under such circumstances, how can a man, even with a small family, expect to meet expenses in these days of high costs on the above wages. A man living in a respectable neighborhood cannot more than pay house rent on the maximum compensation allowed him. The above law has not kept pace with modern costs. A man slightly injured can tide over a few weeks with little or no compensation, but how about a man with a bad compound infected fracture with from three to twelve months' invalidism? The law should be amended so that if a man is off from work longer than his credit will carry him, or he can catch up in a few weeks, should be paid a salary that will pay his regular living expenses that are necessary to support himself and family. A man off from work with a bad fracture, for example, for six months is a bankrupt not only for his previous debts but his actual living expenses during his illness. If greater compensation is beyond the means of the small employers, then the law should be amended to meet the condition, like the larger corporations are helping the employees, that is by carrying group insurance on all of the employees, and assessing them a small amount out of their wages to pay for this insurance. Massachu-

setts is taking the lead along this line. Last year they passed a law requiring all automobile drivers to carry liability insurance.

I want to report a case to which much of the previous discussion applies.

Mr. G. H. B., age 38, laborer, wages $20 a week, was injured in January, 1926, while unloading cement. He had a spiral oblique fracture of the right tibia in the lower third, and a transverse fracture of the right fibula in the upper third, both fractures simple and not comminuted. The X-rays showed a marked arterio-sclerosis of the posterior tibial artery with deposits of calcium salts in its entire length. In fact, the picture of the artery was even plainer than the bones. The fracture was reduced and plaster splints applied. X-rays showed good position. Because of the poor blood supply, he was kept in bed in the hospital, with the bed elevated at intervals, for three weeks. At the end of that time the bones showed no union whatever, the crepitation being more pronounced than at the time of the injury, showing that the blood clot had been absorbed and there was no beginning cartilage or fibrous formation. All clinical and laboratory tests were repeatedly negative, including spinal Wassermann. Due to patient's dislike to confinement to the hospital, he was allowed to go home, and stayed in bed four more weeks. During all this time all possible means were used to increase the circulation. At this time there was still no union at all and crepitation was as marked as ever. In addition, the site of the fracture had become almost painless. We then decided to try motion and irritation, and to allow this we put a tight circular cast on the leg extending from just below the knee to well below both malleoli. He was given crutches and started walking, gradually increasing the weight on the injured leg. At the end of three weeks crepitation had disappeared, but there was about as much motion as formerly. Circular casts, as above described, were kept on him, with frequent changes, and by the end of six months he was gettting some union. The condition was followed by frequent X-ray pictures and all aid to help circulation. At the end of nine months he had fair bony union and the circular cast was changed to a strap circular cast for support. By the end of a year he had good bony union and apparently full strength. Due to the inability to make a circular cast that would support his weight and at the same time let him use his foot, he got about one inch of shortening of the leg, but this was easily taken up by the tilting of the pelvis and he does not limp. He returned to work at the end of a year, at hard labor, and has had no trouble since.

This man had a wife and four children, with another child added shortly after his accident, and drew $10 a week during his illness. Naturally, he was dependent to a great extent on charity, and I know that he and his family often lacked the necessities of life. Had he not been born and reared in the lower strata of society, and been accustomed to hardships, he would have suffered much more than is the right of any man to suffer through no fault of his own.

Shenandoah Life Building.

TUMORS OF THE SPINAL CORD.*

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Tumors of the spinal cord manifest themselves in many ways, both apparent and obscure. The apparent relative rarity of such tumors in ordinary practice is probably due to the fact that the symptoms are not recognized, not necessarily because of ignorance but rather because of negligence of the subject. In general, the manifestations of tumors of the spinal cord are pain, sensory and motor disturbances, changes in the spinal fluid, and roentgenologic abnormalities.

Pain

The most convincing symptom is pain, and yet it is sometimes absent and sometimes vague and not correctly interpreted, so its value is underestimated. At first the pain is along a nerve and for a time is unilateral, then bilateral. It comes on usually while the patient is recumbent, and hence during sleep, from which he is often awakened and forced to get up and walk around for relief. Bending forward and backward, straining, jarring, and coughing aggravate the pain. The patient finds the upright position more agreeable. On percussion of the spinous processes the maximal tenderness is usually found over the spine just over the tumor. These factors characterize extramedullary rather than intramedullary cord tumor, probably be-

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cause of the relative mobility of the former. The pain may be referred throughout the ramifications of the nerve, or only in the proximal or distal parts, or may remain localized in the back. Although the pain is usually neuralgic, it may be manifested by burning or numbness. Pain may or may not exist from the beginning of the extramedullary tumor, but it is usually present at some time during its course. The neuralgic pain, due to direct irritation by the tumor, gives a hint concerning the level of the lesion. If the pain is so vague as to be unrecognized for a long time, the patient often resorts to chiropractic treatment, and the pain is wrongly attributed to it, the examiner not realizing that the pain antedated the treatments. It is, therefore, obvious that a thorough history of the case is of paramount importance.

Sensory Disturbances

The qualities of sensation are all investigated in the examination: sense of pain, temperature, touch, joint movement, and vibration. Of course, the sensory disturbances depend on the tracts involved. Generally speaking, any possible sensory disturbance may occur; usually the extramedullary tumors manifest sensory changes, most marked at a distance from the lesion, whereas in intramedullary tumors such changes progress from the lesion downward. Rarely there may not be any sensory disturbance. Intramedullary tumors are said to produce disassociation of sensation more often than extramedullary tumors; however, sensation in the perianal region is more often preserved in extramedullary tumors. The pathway for touch is still a matter of speculation and the sensation of touch is rather variable in its absence, although it is more often absent in the intramedullary type. The sensory changes are disturbances in the segmental areas rather than in the peripheral nerves, and they tend to become bilateral. It has been noted that following spinal puncture the sensory changes and the sensory level become more apparent on examination. Bladder and rectal trouble is more noticeable earlier in cases of intramedullary tumor, although it occurs early with both types of lesion of the conus medullaris and cauda equina. An extramedullary tumor that has existed for a long time exerts sufficient pressure to produce sensory changes similar to those of intramedullary tumor.

Reflexes.—A knowldege of the nerves concerned with the different reflex movements is necessary. Roughly, there are two types of reflexes,—those from pyramidal lesions and those from lesions of the lower motor neuron. Pyramidal lesions produce hypertonus, increased response, no atrophy, the inordinate reflexes such as the Chaddock, Babinski, and Hoffmann, and usually a loss of the superficial reflexes below the lesion. Lower motor neuron lesions manifest loss of tone, atrophy, and disappearance or diminution of the reflex. The former denotes injury to the cord, whereas the latter denotes injury to the peripheral nerves or cauda equina. Therefore, if one keeps in mind the segment of supply, one has an additional means of locating the lesion. A point worthy of mention is Horner's syndrome, which occurs in cases of lesion in the region of the eighth cervical and first thoracic nerves. It is a phenomenon associated with injury of the sympathetic nerve and consists of ipsolateral myosis, enophthalmos producing pseudoptosis, and ipsolateral dryness of the neck and face.

Motor Disturbances

A knowledge of the segmental nerve supply is necessary, as this and not the direct peripheral nerve supply of the muscle is concerned in motor disturbances. Those who have had experience with the paralyses of anterior poliomyelitis appreciate this. It is not groups of muscles but rather a field that is paralyzed, certain muscles being unaffected although supplied by the same peripheral nerves. In evaluating the motor system, strength, amplitude, atrophy, fibrillary twitchings, and tonus of the separate muscles are taken into consideration.

Fibrillary twitchings are usually due to irritation or degeneration of the cells of the anterior horn of the spinal cord and give direct evidence of a lesion at the level of the segmental field where they occur. This is an important means of determining the situation of the tumor. Fibrillary twitchings are said to be more common in intramedullary tumors, and yet they are often seen in extramedullary tumors. Another sign is myoclonus, which determines the site of the tumor to be in the segment in which the myoclonus occurs. The pathologic basis of this phenomenon

is different from that of fibrillary twitchings and probably represents irritation of the anterior roots or nerves rather than irritation of the horn cells. The other qualities of the motorium, such as strength, amplitude, atrophy, and tonus, are self-explanatory, and what has been said of reflexes can be said of these. Coordination, tremor, stereognosis, gait and station are also investigated, and although altered from the level of the lesion downward, they are seldom of value in determining the exact site of the lesion, aiding merely in postulating a lesion of the central nervous system.

Changes in the Spinal Fluid

Spinal puncture is probably the most important test in some cases. The usual site for the puncture is the fourth lumbar interspace. The skin is prepared with ether, followed by two applications of iodine, and sterile towels are placed about the field. The operator wears sterile gloves and gown and is prepared as for an operation. An imaginary line is drawn between the iliac crests, the desired interspace being at the point where this line crosses the middle of the back. A drop of novocaine is inserted subcutaneously and the patient's back acutely arched. The lumbar puncture needle is then introduced at about the middle of the interspace. The puncture is done with more precision if the needle is grasped with the left hand, the dorsum uppermost and the medial side at the wrist resting on the patient's back, as this method enables one to appreciate the feel of the needle more readily. With experience the dura and subarachnoid space can be expertly punctured. After the stylet has been withdrawn the manometer is connected, and the spinal fluid rises in the instrument. The patient is asked to relax completely, and the fluid descends to a stationary level, which usually takes about five minutes. Relaxation can be hastened by having the patient pant or breathe with the mouth open. When the patient coughs the fluid should rise. This coughing response is used to determine whether the needle is within the subarachnoid space, and it excludes the possibility of temporary plugging of the needle, which would produce an erroneous response to jugular pressure, as happened on one occasion. The height to which the fluid rises in the manometer is recorded, then the jugular veins on both sides are compressed, and normally the fluid quickly rises and falls in the manometer. This indicates that the communication between the head and the needle puncture is free. About 8 c.c. of fluid is removed and after a few minutes the pressure is again noted. The possible observations of pressure in tumor of the spinal cord are: no response nor rise after jugular pressure, slow rise with an equally slow fall, or rapid rise with slow fall. When any of these occur the fluid may or may not be yellow, and there is usually a great difference between the first pressure reading and that after fluid is withdrawn; in fact the fluid may not rise in the manometer after removal of fluid. This phenomenon is called spinal block or a positive Quakenstaedt test. If the spinal fluid is yellow, it will sometimes jellify after standing. Chemical examination of the fluid in a case of spinal block usually shows an increase in albumin or globulin content. Extramedullary tumors are more likely to cause spinal block and yellow fluid than intramedullary tumors. A method often used when a block is discovered is the insertion of needles progressively up the spine until block is avoided, and this is a good way of determining the site of the tumor. If the tumor is low, no fluid, or bloody fluid is sometimes encountered, which probably means, if the operator is expert in spinal punctures, that the tumor has been entered.

Roentgenologic Signs

Usually roentgenograms of the spine are negative, but in some cases of extramedullary tumor an exostosis will occur at or just below the site of the tumor, consisting of a bridge-like spicule of bone on the anterior part of the body and also on the sides. There is never any periosteal stratification, unevenness, or hyperostosis. These changes are found in other diseases. The exostosis is caused by chronic inflammation and venous stasis of long standing in the region of the tumor.

Lipiodol.—A great boon to the diagnosis of tumors of the spinal cord whose site is difficult to determine was the advent of lipiodol. There are two types of lopiodol,—lipiodol ascendens and lipiodol descendens; one sinks and the other floats in the cerebrospinal fluid. When the drug is introduced into the spinal canal, one can localize the upper and the lower levels of the tumor. After a small

amount of fluid is drawn off, the iodized oil is introduced, lipiodol descendens through a cistern puncture and lipiodol ascendens through a spinal puncture below the site of the tumor. Under the fluoroscope the level is noted and later a roentgenogram is taken with the patient in the sitting position. Usually lipiodol descendens is used, being injected through a cistern puncture, and the patient is gradually tilted on the fluoroscopic table and the course of the drug followed until it meets the obstruction, when it stops or is deflected. A roentgenogram is then made.

SOME ALTERED EARLY OPINIONS AS TO CHILDHOOD LIFE.*

By DAVID B. STUART, M. D., Dublin, Va.

After a membership of nearly three years in this society, I am appearing before you with a "voluntary" paper for the first time. It is voluntary in the single respect that it is my wish to remain a member of this splendid organization, and our honorable secretary has tactfully but firmly drawn my attention to the by-law, that requires all those entitled to that privilege, to appear before you at least once every three years. So, to continue on as a member, I am offering this as a voluntary paper, which is not one backed with elaborate scientific controls and observations, nor one compiled from extensive references, records or case reports. But, instead, I am going to try to outline to you some of the interesting facts of childhood life, gleaned from my few years of practice, that have altered my opinions as a student and early practitioner considerably.

In our medical courses we are given more or less concrete definitions, for the various ailments of the human body, that are supposed to follow a well-established outline, which tend to give us a good deal of information in regard to that particular complaint, usually briefly stated. In student days I learned a large number of these, and prided myself on the knowledge of the same, ever looking forward to that day when I would emerge into general practice and recognize these various diseases by recalling the explanatory definitions for them. In the first few months of practice I began to feel myself becoming disillusioned, realizing more each day that disease is far more variable than a definition, and also that, of all the descriptions I could recall by perusal of many textbooks, they stated without exception the pathology in terms of far-advanced and well-organized conditions. So, unless I awaited a time with patience, until this could all take place, I could not hope to recognize the many early symptoms and signs until many valuable days or weeks, as the case may be, had gone. Thus, the many advantages of early recognition and prompt treatment had been lost, never to be regained.

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The Pre-Rachitic Infant.

To avoid rambling on further in a general way, I shall choose from a well-known textbook—Osler's Practice of Medicine—the following definition of rickets: "A disease of infants, characterized by impaired nutrition of the entire body and alterations in the growing bones," an excellent description, no doubt, of the general pathology present in far-advanced cases of rickets, but one that fits the time when the damage is done, and when treatment is of far less value than when instituted in the early weeks of the condition. So it is my object to attempt to draw attention to the period that exists before the well-developed rachitic state, and to the many ailments of infant life that are closely associated.

The observations that follow are on infants from the age of three months on through the third year of life. Before and after these ages it is almost useless to look for the complex that I am picturing. In far more cases than has been the general teaching, a certain series of disorders may be observed. The breast-fed and bottle-fed infants are both affected, but the incidence is much higher in the latter, in spite of the fact that more artificially fed babies are found in the better class homes. The stage of advance is variable, but, regardless, there is a well ordered train of symptoms and signs, both present and past, that will throw a light on the true conditions. These are elicited only after careful and at times persistent inquiry. Usually, after questioning, you will obtain a history of mixed symptoms, along with a record of many intercurrent affections.

The earlier signs and symptoms include, usually, the following:

1. A history of delayed dentition.
2. A history of delayed walking.
3. Extreme irritability.
4. An indifferent appetite.
5. A poor general appearance.
6. Gums somewhat blanched and drawn, and at other times spongy and bleeding on slightest friction.
7. Occasionally purpural spots over the body, chiefly lower extremities.
8. Occasionally general glandular enlargement, more often the submaxillary and anterior cervicals.
9. Large heads, with prominent foreheads.
10. Bald spots, particularly over the occipital region, with a history of profuse sweating, usually nocturnal and when fretting.
11. A decided enlargement of the abdomen, at times so marked as to approach the classical "pot-belly."
12. A late closing of either of the fontanelles.
13. A slight deformity of the chest, with a tendency toward being barrel-shaped.
14. A record of pain and stiffness in joints and limb.
15. A history of numerous "spells," which consist largely of the following complaints—(a) Frequent colds and bronchial attacks; (b) Colitis, at varying intervals, but repeated from time to time; (c) The "colicky" baby, that has it regardless of what formula or general treatment it may be on; (d) A history of obstinate constipation, of long duration; (e) Spring and fall attacks of thrush.

I shall not attempt to go into detailed explanation of the conditions named, for all of us are so familiar with them that it would be only time lost. Think back over a year or two of practice and recall the number of children that you have seen with a half dozen, or even a dozen, of these complaints. Recall also the time that it took to correct the majority of them, and in spite of vigorous treatment that some of them, even then, just simply seemed to "outgrow" the complaint. When I first became interested in this type of child, I was puzzled until I began to realize the close association of these various conditions. I noticed that the gastro-intestinal disorders were of a catarrhal type, that the mucous membranes were frequently inflamed, and that ofttimes a thrush was superimposed. The condition of the skin varies but is usually pasty. The blood counts are not consistent, but as a rule there is a slight secondary anemia, and a very slight leucocytosis. Summing up this data, it appeared to evolve, almost, into a complex, and as the occurrence was far more than occasional, being present in at least 10-15 percent of infants seen in general practice, the question of a suitable treatment naturally arose. This was something that was not so simple to outline, for, obviously, with complaints so multitudinous and various, the routine of therapeutics applied had to be of sufficient scope to include all, for it soon proved out that just a mere general toning up would not be sufficient to produce results. To summarize briefly, treatment has been directed in this type of patient in somewhat the following manner, varying slightly for the individual case:

1. It is of prime importance to remove any foci of infection that may be present. The most frequent of these has been a redundant prepuce, often with phimosis. Occasionally a diseased condition of the tonsil and the presence of severely infected adenoids will be detected, but this latter condition is more often to be seen in the older child.

2. The clothing ought to be light, airy, and should be changed frequently to accord with climatic changes.

3. They should be placed out in the fresh air as much as possible when the weather will permit. If practical, they should be given whatever exercise that is feasible. If before they can walk, they can be given something approaching a light massage, to be employed once or twice daily either by the nurse or mother.

4. The older and more advanced cases are helped appreciably if they are exposed to the actual ray of the sun, particularly over the chest region. It is often well to strip them entirely, covering the head only, and allow them to run and crawl around in sunny spots until they are thoroughly tanned.

5. The diet is of great importance chiefly from the fact that it should be a very nutritious one, filled with milk, butter and the various fresh foods of high vitamine content. Here the mistake is made by many mothers of nursing their babies too long. Many of them insist on nursing their children "through the second summer," and some will nurse them for three to five years. This is often due to fear of the disturbance that may come with weaning the baby, but the vast majority keep on starving the baby and pulling themselves down, in accordance with a popular belief that, in doing so, they will prevent larger families.

6. The presence of fruit juices plays an important part, for there is a scorbutic tendency noted particularly in the bottle-fed baby. This assumes the form of spongy and easily bleeding gums, and the presence of purpural spots over the body, more especially the lower extremities. Aside from this, fruit juices exert a marked beneficial effect on the general development of the child and, when used in conjunction with well prepared fresh prunes, will nearly always overcome the most obstinate case of constipation without the use of any other treatment.

7. Last, but not least, comes the medicinal treatment. This is confined to one article that is of greatly disputed value. I refer to cod-liver oil, of which nothing but the pure oil should be used, as the so-called emulsions, extracts, etc., are of little or no value in this condition. Cod-liver oil should be given in fairly large doses for the age for which it is to be prescribed, and is best given in just two doses a day. It is best after meals, and should never be forced on the child either by bribery or threat. If the indications and necessity for treatment are fully explained to the mother, I have noticed in those that persist, that at the end of ten days most of the children seem to want the oil, almost as if they realized the benefit therefrom. It should be given only in the winter months, as it will upset the most robust of digestions in the warmer months of the year. Occasionally I use a cod-liver oil that has a small amount of phosphorus incorporated, with even better results than the oil alone. In the hands of an intelligent and earnest mother, the majority of children will take cod-liver oil with little or no difficulty, but once in a while there will be one that just simply cannot take it. To this group I have given with splendid results a preparation of cod-liver oil, marketed as Coco-Vitamin, prepared by Eli Lilly and Company. In this the oil is blended with coco-syrup, is unaltered, and makes a dose that is not offensive to the most delicate digestion. It is necessary, however, to give much larger doses, if one hopes to obtain as prompt results as with the pure oil.

Conclusions.

1. Advanced rickets is seldom encountered, and, if so, can be little improved by the treatment outlined. A so-called complex approaching that condition is often seen. This, if untreated, delays general physical development, and results in a week, mal-nourished child that is a frequent sufferer from intercurrent affections, and is more often acutely ill from apparently simple disorders.

2. Personal experience seems to show that special attention devoted to this type of child results in a sharp drop in infant death-rate from other conditions that may be super-imposed.

3. Treatment must be prolonged over a period of months, and repeated, if indicated. Cod-liver oil in its pure and unaltered state is the one and only medicinal product that is of great benefit, for any other medicine is purely palliative or symptomatic in its results. All of which goes to say that patience and persistence are the cardinal virtues to be strived for if we are to hope for results.

TOXIC GOITER.*

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The term toxic goiter as used in this paper includes all types of goiter in which there is evidence of increased or perverted secretion of the thyroid gland. The basis for conclusions drawn is a review of the last forty cases operated upon at the Lewis-Gale Hospital. In these cases there were no deaths and the end-results were uniformly good. Previous to this series, our mortality rate and end-results were far from satisfactory so we felt that a careful review, not only of the case histories

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themselves, but of our general plan of management, would be of much benefit to us in our effort toward improvement, and posibly of interest to others.

There is no need for presenting a detailed summary of our findings, for the number of patients is too small to be of much benefit as a statistical report. After a review of the literature, I believe they represent a fairly average group. There were thirty-two women and eight men. The youngest female was sixteen and the youngest male twenty-four. There were ten patients over fifty years of age, with the eldest seventy.

No information of value as to the causative factor was obtained. Of the few who attempted to give some reason for their present condition, six gave influenza, three operations, one menopause, and one mental stress.

As an aid to diagnosis, we divide toxic goiter into four general types or classes:

1. Exophthalmic.
2. Fetal Adenoma.
3. Adult Adenoma.
4. Malignant Adenoma.

These cannot always be clearly differentiated except with the microscope, but we find that with increasing experience we are able to place more and more of them in their proper group before the pathologist has made a section of the gland.

The exophthalmic type is usually easy to diagnose with its acute and rapid onset, extreme nervousness and bulging eyes. This usually occurs in the young and is so severe that they seek medical advice early in the disease. The enlargement in the neck is smooth and symmetrical and frequently pulsating. Headache, which we found to be a prominent and frequent symptom, both before and after operation, in this series of cases, is worse in the exophthalmic patient.

The fetal adenomata are fairly characteristic. They frequently have a large nodular goiter which they have had for years, often since puberty. Something happens which causes it to become toxic. It is often hard to convince the patients that this could possibly be the cause of their present symptoms. Loss of weight, nervousness and weakness, with a consistently elevated metabolic rate, will point to the goiter as the seat of disease.

Similar to the fetal adenoma is the adult adenoma or latent type. This develops gradually and produces a nervous unstable individual who is subject to periods of toxicity, followed by comparative normalcy. In this respect it differs from the fetal adenoma, which nearly always grows increasingly worse once toxic symptoms are developed. We are not certain in our own minds that this constitutes a distinct type, feeling that it may be a latent type of exophthalmic gland rather than adenoma.

Malignant adenomata cannot be differentiated from the others clinically. The symptoms and appearance of the gland are often identical but after the goiter is removed an area of malignant cells is found.

In contrasting the symptoms of toxic goiter in the old, e. g., those over fifty, and the young, there are several things with which we have been impressed.

1. Old people are more liable to have a coarse tremor than a fine one. Loss of ability to write legibly on account of their hands shaking is often their most troublesome symptom.
2. They are more liable to come to you with the complaint of neuro-muscular weakness.
3. They are more liable to a rapid loss of weight with a normal food intake.
4. They are more liable to paroxysmal cardiac disturbances.
5. Diagnosis is not so clear in the aged and we are forced to rely more on basal metabolic readings.

Exophthalmos was a symptom noticeable by its infrequency in this series of cases, only eight showing this condition, although twenty-seven were of the exophthalmic type gland.

Diarrhoea was present in six cases, and all of these showed an achylia-gastrica. For this reason, we are not inclined to believe that thyroid intoxication alone will produce a diarrhoea, but will do so in the presence of an achylia.

In our cases of exophthalmic goiter with increased basal metabolism there was a diminished menstrual flow rather than an increase as some text-books describe.

The nutritional changes constituted not only a loss of weight but what seemed to be an atrophy of the peripheral muscles, evidenced by their weakness and a tendency for them to sag at their bony attachments. This is in keeping with the known facts in regard to the metabolic activities in exophthalmic goiter,

which are evidenced mainly by a nitrogen imbalance. For many years we have known that there is a marked tendency toward tissue waste, even though the protein intake is entirely adequate. The increased brittleness of the nails with a tendency toward excavation and separation of nail from matrix is probably a nutritional disturbance of a similar nature.

The treatment of toxic goiter is essentially surgical, although close co-operation with the internist is necessary for satisfactory results. The nature of the symptoms is such that the patient in most instances first seeks the advice of a medical man rather than a surgeon; therefore, the diagnosis and pre-operative care rest largely upon his shoulders. Basal metabolic readings are of great help in arriving at a diagnosis, and for accurate comparison should be made by the same individual. We feel that the use of Lugol's solution as an aid to diagnosis is seldom justifiable. We use it routinely in the preparation of all cases for operation and find that all types of toxic goiter are benefited by it. The most marked benefit is seen in those who have not taken it at some previous time. Lugol's solution, rest, increased diet, and a mild sedative, such as luminal, are the essential points in preparing the patient for operation. Digitalis is never used, even in fibrillation.

The operation is performed under combined gas-oxygen analgesia and local novocaine anesthesia. Administration of gas-oxygen is begun as soon as the patient enters the operating room. A short collar incision is made and the skin dissected off of the platysma. The muscles are divided in the mid-line and not cut. The capsule is dissected from the gland and retracted with the muscles of the neck. After removing a major portion of both lobes of the thyroid gland, a rubber dam drain is passed into each fossa and the capsule replaced by suturing with number O catgut. The drains are brought through the skin incision and the wound closed with metal skin clips.

Immediately after operation all cases receive an intravenous injection of one thousand cubic centimeters of normal saline with fifty grammes of dextrose, and are given a hypodermic of one-sixth grain of morphine. The morphine is repeated whenever necessary, and this should be often enough to insure complete rest. The dressings on the wound are changed in six hours, and again twelve hours later, and then daily until there is no drainage. Early and frequent dressings are very essential to prevent absorption of the highly toxic serum which gathers in the wound. Skin clips are removed on the third day. The use of Lugol's solution and luminal are continued for some time following operation and withdrawn gradually. The patients are usually permitted to leave the hospital in from one to two weeks.

The major conclusions which we have drawn are these:

1. We are convinced that an early diagnosis of toxic goiter is as important as an early diagnosis of tuberculosis, and frequently as difficult. It has been demonstrated that definite changes in the sympathetic nervous system are produced by increased thyroid secretion over a long period of time, and these changes probably explain the slow convalescence and sometimes failure to get complete relief after thyroidectomy on these cases.

2. For all practical purposes, there is no necessity for attempting to draw difficult clinical distinctions other than establishing the fact that the patient has a goiter which is producing toxic symptoms.

3. Diagnosis is much more difficult in patients over fifty years of age.

4. Every effort should be made to establish a diagnosis before giving Lugol's solution, but it will benefit all types of toxic goiter and will help confirm a diagnosis which may be doubtful.

5. The treatment is essentially surgical.

6. The old practice of cutting the ribbon muscles of the neck is not necessary.

7. Best results can be obtained by a coordinated group familiar with the entire plan of treatment and all of whom are working in unison.

PYELITIS.*

By CHARLES H. LUPTON, M. D., Norfolk, Va.

Pyelitis, inflammation of the pelvis of the kidney, is one of the common conditions that the physician is called upon to treat. Only a few years ago it was thought to be rare, but as methods of diagnosis have improved and physicians have learned the importance of making more thorough and complete examina-

*Read before Norfolk County Medical Society, March 28, 1927.

tions, we have learned that this is not a rare disease. Inflammation of the pelvis of the kidney is practically always associated with some inflammation of the kidney itself, but the term pyelitis is used to apply to the cases where the pelvis of the kidney is the principal seat of the infection.

Pyelitis is classified into the following groups: (a) simple pyelitis; (b) pyelitis of pregnancy; (c) pyelitis of infancy and childhood; (d) pyelitis following surgical operations, and (e) pyelitis due to tuberculosis. Tice gives another classification, those occurring in newly married women. It is further divided into the acute and chronic cases.

Pyelitis is caused by bacterial infection, but under ordinary circumstances the kidney will eliminate bacteria without itself being damaged, so we find it is necessary that there be a lowering of resistance before infection takes place. Pyelitis may occur at any age, but is most frequent from twenty to forty years of age. It is also fairly frequent in infancy and childhood. It occurs more frequently in females than in males, nearly two-thirds of all cases being found in females. Simple pyelitis may occur in one or both pelves, but it is most often bilateral. Among the most common conditions that predispose to pyelitis are: obstruction of the urinary tract; focal infections; various acute infections and general causes, such as anemia or any condition that especially lowers general resistance. Obstruction of the urinary tract is probably the most common predisposing factor. The most common infecting organisms in the order of their frequency are: the bacillus coli communis, the staphylococcus aureus and albus, the streptococcus and the tubercle bacillus. The gonococcus, typhoid bacillus, pneumococcus, etc., are occasionally found. The colon bacillus is found in the great majority of cases. Bumpus and Meisser believe that the streptococcus is the infecting organism and that the colon bacillus is a secondary invader, which usually grows and usurps the field. They also believe that the teeth and tonsils may harbor the streptococci which have a selective action for the urinary tract. In chronic cases we often find one or more organisms present.

The methods of invasion are: (a) hematogenous or blood borne type; (b) ascending type, and (c) by direct continuity. For a long time it was thought the principal route of infection was the ascending route, but it seems to be the consensus of opinion now that infection ascending the urinary tract is rare. It is possible that infection may ascend the urinary tract by way of the lymphatics. The principal route of infection is through the blood stream.

Pyelitis is a rather frequent complication of pregnancy, and it occurs most often during the last half of gestation. It is especially prone to occur in cases which have had a previous infection of the kidney, and in cases of stricture of the ureter. As the uterus increases in size and extends above the brim of the pelvis it impinges upon the ureters and causes compression, resulting in stasis, which predisposes to pyelitis. It seems that the compression and resulting stasis are the important factors, which is borne out by the fact that all that is necessary to cure many cases is to deliver the woman and the pyelitis promptly subsides.

From the cases we see, and from the cases reported, it would appear that pyelitis in infancy and childhood is increasing, but it is doubtful if there is an actual increase; what probably is true is the fact that we are diagnosing more cases than we formerly did because we are looking for them and because we are making more thorough examinations than formerly. Pyelitis of infancy and childhood is a rather frequent complication of infections of the respiratory tract and it often follows gastro-intestinal upsets. It is also a rather frequent complication of scarlet fever, typhoid fever, pyemia, *et cetera*. In fact, it is one of the more common complications of all the acute infections. It is most frequent in girls, and the younger the child the more frequent it occurs. In young children it is usually self-limiting.

Pyelitis as a post-operative complication is rather infrequent. Maloney, reporting in the *American Journal of Obstetrics and Gynecology*, Vol. XL, No. IV, states, in 7,300 gynecologic operations at the Woman's Hospital, there were twenty-four post-operative complications of pyelitis, which is about one-third of one per cent. It is probable that lowering of resistance and shock following the opera-

tion are the chief factors predisposing to pyeletis as a post-operative complication.

Pyelitis is very often due to renal tuberculosis, and if there is any reason to be suspicious of tuberculosis, it is necessary that a very careful study be made before tuberculosis is excluded. The diagnosis is made by finding the bacillus in the urinary sediment or by guinea-pig inoculations; repeated examinations and tests are necessary to make a decision. Pyelitis due to renal tuberculosis is found most often in males and occurs most frequently during middle life. It is probable that primary renal tuberculosis does not occur, and if a diligent search is instituted other evidences of tuberculous involvement can often be found. Pyelitis due to renal tuberculosis is very often bilateral, and tuberculosis of the remaining kidney is very often the latent cause of death following the removal of a tubeculous kidney. Autopsy reports of cases having had tuberculosis of the kidney have shown as high as seventy per cent bilateral involvement. Tuberculosis of the kidney has a tendency to wall itself off and the urine may remain free for years, so we must be cautious in declaring a patient well even though we have a clinical cure. On the other hand, tubercle bacilli may be found in the urine without the kidney being infected.

Pyelitis is divided into the acute and chronic cases. The acute type usually begins with general aches and pains, and there usually is pain and tenderness in the kidney regions. Chills and sweats are common, as well as frequent urination and dysuria. There may be nausea and vomiting. There is considerable fever, which usually ranges from 100 F. to 105 F. The urine contins pus, albumin and red blood cells. In typical cases of pyelitis we do not find casts. As the acute condition improves, the albumin gradually disappears and there is a general lessening of pus with its complete disappearance with recovery. If the fever remains high, it is evident that drainage is not good. The acute symptoms usually last from three to ten days, but may persist longer.

In chronic pyelitis there will usually be found some pus cells, but as a rule there is no albumin. It is possible to have chronic pyelitis without finding pus cells in the urine, but a smear will usually show some germs. Chronic cases may develop following an acute attack or they may gradually develop without being preceded by an acute onset. It is more common to develop without an acute attack. Chronic cases may exist for years without giving marked symptoms. There is usually frequent and burning urination, and there may be dribbling or incontinence of urine. Hematuria may be present, pain is variable and nervousness is a fairly common symptom.

The diagnosis does not prove difficult as a rule, but to determine the cause of the pyelitis will require a very careful examination. By ureteral catheterization we can determine where the pus is coming from. Then it is necessary to determine if there exists a stricture, a stone in the ureter or kidney, hydronephrosis, tumor or renal tuberculosis. It is essential that tuberculosis be diagnosed, if present, and eliminated as a cause of pyelitis if not present. It will be necessary to make repeated microscopic and bacteriological examinations of the urine, and more important, repeated guinea-pig inoculations. Renal tuberculosis is often masked by colon bacillus infection. Bladder changes near the ureteral orifice should arouse suspicion of renal tuberculosis. Tumors, strictures and hydronephrosis can be diagnosed by pyelograms. Calculi in the kidney are practically always accompanied by pyelitis. They should be kept in mind as one of the causes of pyelitis. In pyelitis the functional output is practically normal, whereas, if there is an associated nephritis there may be marked decrease in the output of urine. It may be necessary to determine the output from each kidney, which can be done by the indigo-carmine or phenolsulphonephthalein tests with the ureters catheterized. Continued pain in the kidney region should make us suspicious of the formation of an abscess. Malaria is one of the conditions that we are occasionally called upon to differentiate from pyelitis. In women catheterized specimens are essential. Of all the conditions to be differentiated from pyelitis probably appendicitis is the most common.

Report of Cases

Mrs. T. F., aged 30, came to me in June, 1925. She complained of having had several attacks of pain in the right iliac region.

These attacks usually lasted about three or four days, and they recurred about every three months. The attacks were not especially pronounced, but were severe enough to keep her in bed during most of the attack. A bimanual examination was made, which was negative except for an infection of the cervix. There was slight tenderness on deep pressure over McBurney's point. Microscopic examination of the urine on several occasions was negative. After a thorough examination, except for not having an X-ray taken, which was omitted on account of expense, the case was diagnosed as chronic appendicitis. Operation was decided upon. No abnormality was found except with the appendix, which appeared fibrous. There were no bands or adhesions around the appendix, but as all other organs were normal, we felt justified in calling the condition chronic appendicitis. There was no pathologist at the hospital then and no pathological examination was made, so we are not sure whether the appendix was diseased or not. In any event, the appendix did not appear to be the seat of much trouble. It was hoped though that the appendix was at fault, and that its removal would relieve the trouble. About three months after the operation she had an attack similar to those she had complained of previously. I saw her during this attack, and a microscopic examination of the urine revealed pus. The interval between the attacks did not show any pus in the urine. Only for a few days at the time of the attacks did the urine reveal any pus from microscopic examination, and that is the reason we did not find any pus at the time of the operation. She continued to have similar attacks at fairly regular intervals, and finally I convinced her of the necessity of having her ureters catheterized. Catheterization of the ureters revealed a stricture of the right ureter. The stricture was dilated and she has had no attacks of pain nor any pus in the urine for six months. It seems evident that the stricture was the cause of the original attacks.

Mrs. J. C. D. was first seen July 31, 1925, at 6 A. M. She was taken suddenly ill about two hours previously with acute pain in the right iliac region. There was considerable nausea and she had vomited twice. There was tenderness and some rigidity over McBurney's point. When asked where her pain was located, she put her hand exactly over McBurney's point. She had her thighs partly flexed on her abdomen. Her temperature was 99 F., and her pulse was 96. It appeared to be a typical case of acute appendicitis. She was sent to the hospital to have laboratory tests made, and with operation in view. I expected to find a leucocytosis, but the blood count was normal and the urine was loaded with pus. This was an attack of acute pyelitis exactly simulating acute appendicitis. General measures for pyelitis were instituted and she made a prompt recovery without any local treatment.

Treatment.

The treatment of pyelitis consists of absolute rest in bed until all of the acute symptoms have subsided. Regulation of the bowels is important and should not be overlooked. Water should be forced by mouth, though it should not be forced to the extent of causing congestion of the kidney, but that danger is not great and we usually give too little water instead of giving too much. Some prefer giving hexamethylenamin from the beginning, but others prefer giving potassium citrate for the first few days and when the fever drops to change to hexamethylenamin. Perhaps the majority prefer the latter method. When giving hexamethylenamin, it will be necessary to give sodium acid phosphate if the urine is still alkaline. Hexylresorcinol is very useful if the pyelitis is due to the streptococcus or staphylococcus, but it is not so useful against the colon bacillus, especially if there are many organisms present. When giving hexylresorcinol, it is advisable to decrease the fluids so a greater concentration of the drug will be secured.

The diet should be very bland, and the bulk of it should consist of milk or butter-milk. Cereals are admissible. As the condition improves, the diet can be gradually increased.

In the acute cases it is advisable not to use local or instrumental treatment until after the acute symptoms subside, and then only when the condition is not improving. In stubborn and resistant cases the most effective treatment is pelvic lavage. Of all the drugs used for pelvic lavage, the most frequently used is silver nitrate in strengths of from one to two

per cent, and it probably is the best. Another drug gaining favor is mercurochrome. It is used in solutions of from one to five per cent. It is well to remember that any drug seems to lose its effectiveness after a certain period, and that it is well to interchange them; this applies to other conditions as well as pyelitis. Establishing drainage in pelvic lavage is the important factor, and the drug used is of minor importance. In some cases it is necessary to leave in a catheter for a few days to establish sufficient drainage. Before a case can be declared cured, it is necessary to secure negative microscopic findings as well as negative cultures. In the treatment of pyelitis, as well as in other conditions, it is necessary to eradicate all foci of infection, and this especially applies to the chronic cases.

In pyelitis of pregnancy, if the general measures outlined above do not suffice, the proper procedure would be pelvic lavage, more radical measures not being justified until pelvic lavage has been given a thorough trial. It is surprising how quickly the severe cases of pyelitis of pregnancy respond to pelvic lavage, and no one would be justified in taking radical steps until lavage had proven not to be useful. Of course, it is obvious, if there exists a surgical condition of the urinary tract which causes the pyelitis, it will have to be corrected before we could expect to relieve the pyelitis by pelvic lavage.

Pyelitis due to renal tuberculosis is best treated surgically, provided only one kidney is diseased. Unilateral renal tuberculosis is an absolute indication for early nephrectomy. Involvement of the ureter and bladder usually subsides or the condition improves after nephrectomy, but if there is much involvement of the ureter it should be resected near the bladder. Tuberculin should be given after nephrectomy. Nephrectomy is contra-indicated in bilateral renal tuberculosis, unless there is only slight involvement on the side not to be operated upon. Nitch reports the following results following nephrectomy for renal tuberculosis two and one-half years after operation: dead, twelve per cent; cured, fifty-two per cent, and the remainder suffering from urinary symptoms.

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THE ROLE OF CORRECTIVE EXERCISES IN PTOSIS.*

By J. BLAIR FITTS, M. D., Richmond, Va.

Ptosis, "drop stomach", "drop heart", "fallen viscera", cover a much wider range of changes than are usually conveyed by their terminology. To consider these changes more rationally, it is essential to review the anatomy of the parts. Almost as much of the cavity of the abdomen as of the thorax lies under shelter of the ribs. The upper boundary is made up of the two domes of the diaphragm, the liver fitting into the right, part of the stomach and spleen into the left. About 20 feet of small and 5 feet of large intestine occupy the greater part of the cavity. The kidneys, pancreas and generative organs complete the contents. The size and shape of the abdominal cavity depend on two main factors; the excursion of the diaphragm and tone of the abdominal muscles. The intra-abdominal fat and shape of the thorax also play a part.

There are two distinct types of ptosis, congenital and acquired.

The congenital type is very characteristic and is often classified as asthenia universalis congenita, splanchnoptosis, visceroptosis, etc. To this class belong the thin, narrow chested, non-athletic individuals. Head held forward, shoulders dropped and forward, chest flat, with very slight diaphragmatic excursion, abdomen relaxed, flat above, pendulous and flabby below; hyperextension of spine, dorsal spine straight with beginning rounded dorsal kyphos (dorsal round back); very often relaxed, back knees with sagging, pronated feet. Peripheral circulation sluggish, hands and

*Read before the Richmond Academy of Medicine.

feet cold and sweaty, with tendency to cyanosis. Mucous membranes pale and anaemic looking beyond the blood picture.

Their complaints are multitudinous, from the simple hypotension, practically always found, with its loss of mental and physical vitality, to the patient, who feels that "I can't get my breath", "Am about to go away", and is fearful continuously of dying. Nervous indigestion and dyspepsia are almost constant, constipation and painful menstruation, cyclic vomiting, pain and fullness in epigastrium, with queer feelings about the heart, often backache and lack of all desire except to lie down and rest. These patients present a pitiful figure, and it is largely due to our lack of patience with them when the pharmacopeia runs out of drugs, that the chiropractors and such cults are being so greatly patronized.

Recumbency is the one means of relief adopted by practically all these patients. This of itself is suggestive of the correct form of treatment but we have been mighty slow in making use of it. Dr. George W. Wagoner has put the whole principle of treatment on a firm, indisputable basis by proving that there is normally a negative intra-abdominal pressure and that this pressure is markedly increased in the splanchnoptotic when assuming the erect position, returning to normal when recumbent. The negative pressure is influenced by respiratory movements and more by the tone of the abdominal musculature.

This increase in negative abdominal pressure explains practically all of the above mentioned symptoms. With increase in pressure, there is an engorgement of the whole splenemic circulation, which, when long continued, not only tends to give trouble in this region but at the same time drains and deprives the whole peripheral circulation of the necessary blood supply. The systolic pressure is lowered and the patient soon feels tired and unable to carry on his work. With recumbency, some of the congestion is relieved and a more normal state of circulation set up.

This congestion involves the whole splanchnic area and the symptoms and sequelae are too numerous to enumerate here. Following the findings of Wagoner to their logical conclusion, the treatment is very simple,—correct as much as possible the loss of tone of the abdominal muscles at the same time giving support and correcting the posture. General exercises are of course of great value but, in this type of splanchnoptotics, what is needed is development of respiratory and abdominal musculature and unless these are looked after especially, general exercises do not give results. Breathing exercises are used to elevate the ribs and costal angle, thereby using the pumping action of the diaphragm on the whole splanchnic system and giving more room for the thoracic and abdominal viscera; abdominal exercises to support and hold up the viscera and prevent increase of negative intra-abdominal pressure in the erect posture; lying prone over a rolled-up pillow to throw the abdominal contents into more normal position and relieve congestion. Support to the lower abdomen is almost essential in the majority of cases. If the tone of the abdominals is very low, they are unable to take up the load for sometime and should not be expected to do so. A very good therapeutic test is strapping the lower abdomen. There are very few cases in which support can not be abandoned in a comparatively short space of time.

I would like to state here that I believe a great many of the so-called undernourished and undeveloped children come under this heading and that they will be more benefited by corrective exercises than by stuffing with food.

The second type of ptosis, acquired, may be classified as follows, in order of frequency:

1. Postoperative; 2. Post-partum; 3. Following prolonged illness.

Post-operative results would show a much larger percentage of cures were the matter of the abdominal wall taken more into consideration. We would never think of operating on the arm or thigh muscles, as the abdominals are operated, without afterward seeing that the traumatized muscles were brought back to normal tone by exercises, massage, etc. Even in fractures without much muscle trauma this is necessary. The same should be done with the belly muscles.

Relaxed abdomens with ptosis and backache are very frequent following laparotomies and prevent what would otherwise be brilliant results. The majority of surgeons advise some form of abdominal support, but why stop there? Abdominal exercises should be begun from six to eight weeks following all laparotomies and continued for at least six months. Support may be used at the same

time if desired but can usually be discarded in about three to four months.

During and following childbirth, the average woman is sadly in need of toning up her abdominals both to help with her delivery and take up the slack after delivery. During pregnancy, the gravid uterus acts as more or less of a support to the general abdominal viscera, but after it is emptied, the whole burden is thrown on the relaxed, tired-out abdominals, with the result that in the great majority of cases there is constipation, pain in abdomen and backache. At this time the musculature needs support as well as exercise.

Following prolonged illnesses, there is a marked loss of general muscle tone along with a decrease of intra-abdominal fat. As long as recumbency is maintained, there is not a great need of visceral support, but once the erect position is assumed, the weakened abdominals are unable to bear up under the strain and the patient has a general splanchnoptosis to contend with.

This paper is not attempting to place all of the ills of the flesh on lack of abdominal exercises, but to bring to your attention a very useful and necessary part of your medical armamentarium, which is simple and can be used by all, and which will cut down the dissatisfied patients who are seeking relief from so many cults.

318 *West Franklin Street.*

Correspondence

Let The State Health Department Help You in Diagnosis of Suspicious Cases.

Richmond, Va., Aug. 1, 1927.

To Virginia Doctors:—

We believe that we should call your attention to the possibility of typhus fever in Virginia. There have been called to our attention recently two cases in widely separated areas with whom there could have been no contact. Each is strongly suspicious of this disease. The blood gives a positive agglutination to Protous X 19 and negative to both typhoid fever and para-typhoid. The Hygienic Laboratory looks upon this test as positive for typhus.

The cases had a sudden onset, one ushered in by a chill, and the other a doubtful chill, loss of appetite, definite malaise, one case gastric disturbance. From the continuance of the temperature typhoid was suspected. Four or five days after the onset a peculiar eruption appeared on the body and extremities, absent on the face. The rash was petechial in character. The rash is unlike that of scarlet fever, measles, typhoid fever and smallpox.

The abdominal symptoms were irregular; some days the abdomen was more or less flat, other days tympanitic. Nervous symptoms and mental cloudiness have marked these cases. The facies resembled typhoid fever.

If you have suspicious cases, let us know and we will gladly aid in the diagnosis. Specimens for blood cultures should be sent in. Mailing cases will be sent you upon request. In all such cases great care should be taken to prevent vermin, as it is believed this disease is carried by the body louse, possibly also the bed bug.

Ennion G. Williams,
State Health Commissioner.

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William Hunter was born at Long Calderwood in 1718 of an old Scotch family. He began early to study for the ministry, but changed his mind because he "could not subscribe to the dogmatical articles of faith." From 1737 to 1740 he lived with Dr. Cullen and the two men had some sort of an arrangement whereby one attended the medical school while the other looked after the practice. In 1740 Hunter attended Alexander Monroe's lectures in Edinburgh. The next year he went to London and lived for a short time with Smellie. Later he became the assistant to Dr. Douglas and at same time was a pupil at St. George's Hospital. In 1846 he began to lecture to a society of navy surgeons first on operative

surgery and later on anatomy. At first William Hunter practiced both surgery and obstetrics, but he always had an aversion to surgery. In 1748 he made a tour on the Continent and at Leyden visited the great anatomist, Albinus. He was greatly impressed with Albinus' admirable injections. About this time William's younger brother, John Hunter, came to London as his pupil. The fame of the two brothers grew rapidly, the one in anatomy and surgery, the other in anatomy and midwifery. William Hunter is said to have been the first man in any country to attend a queen in confinement, and he spent 100,000 pounds on his museum in Great Windmill Street. His character is summed up by Paget thus: "He never married; he had no country house; he looks, in his portraits, a fastidious, fine gentleman; but he worked till he dropped and he lectured when he was dying."

William Hunter's great work on the anatomy of the human gravid uterus is characteristic of the man. He was twenty-four years in completing it. He employed the best artist for the illustrations and insisted that they make the drawings life size directly from his preparations. The drawings were made by Edward Edwards, Alexander Cozens, Blakey, and Rymsdyk. The copper plates were engraved by Ravenet, Scotin, Major, Muller, Grignion, Canot, Maleuve (or Maleurvre), Mitchele, Mechel, Aliament, Fougeron, Bryer,

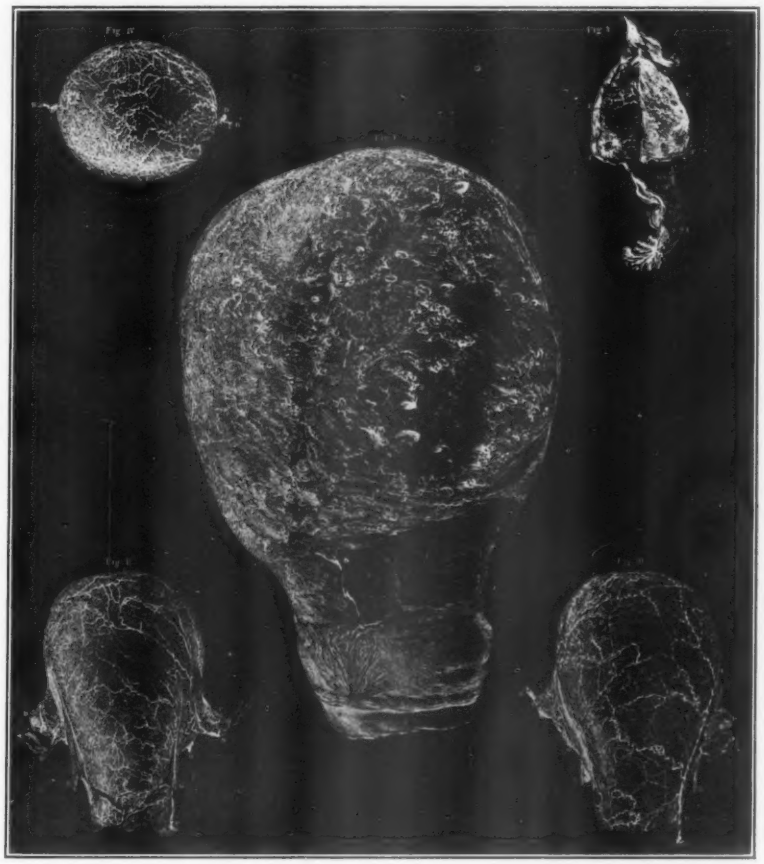

Illustration of uterus that had first been injected with colored wax and turned inside out. The placenta and the membranes were then scrubbed off with a brush. The placental site is shown to the right of the center of the uterus, with the large maternal blood vessels that supplied the placenta, torn across. (Courtesy of the Army Medical Library).

Rymsdyk, Worlidge. Powle, and Robert Strange. The only adjective that adequately describes the finished work is exquisite. The artistic excellence compels our admiration, and the anatomic exactness takes us at once from the crude medieval ideas that till then pertained, to the distinctly modern conception of the relationship of the fetus to the uterus. There was no transition period. This great anatomist-obstetrician proved that the fetal and the maternal circulations were separate and distinct, one from the other, and that the desidua was uterine in origin. According to Choulent, Leonardo di Vinci was the first to correctly depict the position of the fetus *in utero*, but his drawings were not published and were unknown until comparatively recent times. Hunter's work had immediate effect on medical teaching. It went through a number of editions. The plates, re-engraved in the original size with text (unfortunately) corrected by Hunter's nephew, Matthew Baillie, appear in Caldani's *Icones Anatomicae*, Vol. III, and as a separate volume under the title, William Hunter's Anatomical Description of the Human Gravid Uterus and its Contents, *London*, 1794. A new edition from the original well preserved plates was published in London by Edward Lumey in 1815. Rigby brought out an octavo edition in 1843, and L. F. von Froriep an edition in German in 1802. The Sydenham Society acquired the original plates and in 1851 published an edition from them by a lithograph process for distribution among its members.

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

To the Ladies of the Auxiliary:

Mrs. John O. McReynolds, President of the Woman's Auxiliary to the American Medical Association, at the meeting in Washington, in May, addressed the ladies as follows:

"I wish to urge the women of the Auxiliary to leave nothing undone to encourage their husbands in attending medical meetings, being sure to go along with them.

"In order that we may accomplish the beneficent results our impulses are calling for, we need the wise counsel and united strength of the women whose lives are inseparably linked with the ideals of the medical profession and the welfare of the American people. We bow in reverent admiration before the marvelous achievements of the scientific men of the healing art, and our function is to help in the work of enlisting the interest and co-operation of the general public in making more effective the program of progress throughout our country.

"In the evolution of our race, we have become a new factor in the problems of the world. We have become a new force with enlarged opportunities and responsibilities. It remains with us and our wise counsellors in the medical profession to determine the avenues through which our pent-up energies shall be directed. We are an organized army, growing by leaps and bounds. We are already in the field. Our Bulletin is telling the story of the victories won in our first engagements.

"Read the Bulletin and confer with your husbands, whose experience and sympathy will be of inestimable value, and bring with you the ripened fruits of your thought and patriotic purposes. When I think of all the Auxiliary has accomplished in the few years of its existence and recognize its wonderful possibilities and opportunities ahead of us, I feel incompetent to measure up to the responsibilities of a National Auxiliary President, but when I remember the wonderful ability of the women who have led in all our achievements, I feel confident that they will give me their indispensable assistance and sympathetic support. Without some sacrifices we cannot reach the goal of our highest possibilities.

"But if men like Dr. Jesse Lazear and his courageous colleagues could so heroically sacrifice their lives by allowing themselves to be bitten by mosquitoes known to have sucked the blood of dying yellow fever patients, in order to bring about the eradication of this deadly disease, surely the wives of the medical profession should be willing to give some of their time and talents in the cam-

paign which the physicians of America have launched to protect the health and lives of our people. We should lead in this crusade for health and happiness and by consecrated and concerted efforts under the direction of their husbands, the wives of the physicians of America can develop in the most effective way the present dormant interest of the general public in the vital question of health. Let us combine our energies and influence to stimulate a deeper appreciation of our own great heroes who are battling against the physical enemy—Disease. Let us build monuments of enduring service to those who have so heroically given the best in their lives, and even life itself, in conquering the ravages of disease that day after day and year after year are throwing an endless gloom over our land."

Mrs. McReynolds is not only the President of the Woman's Auxiliary. She is also its mother. It was in her home, in Dallas, Texas, that the first auxiliary was organized. Dr. Jabez Jackson, President of the American Medical Association, said of the retiring President, Dr. Wendell Philips, "it is better to have won love and appreciation than to have built marble halls or have painted wonderful pictures." That is how the auxiliary feels toward Mrs. McReynolds, and she loves each state and each county auxiliary, as a mother loves her child.

In organizing, Mrs. McReynolds wishes the doctors' wives always to remember that the auxiliary has the hearty approval of the American Medical Association. However, there are a great many doctors who are a little afraid of an auxiliary, because they can see the dangers into which the women can so easily be led. Each county auxiliary must have the approval of its Medical President, without which the auxiliary cannot be organized. With his co-operation and assistance the auxiliary can be of great help to the profession.

The Truth About Medicine

In addition to the articles enumerated in our letter of May 28th, the following have been accepted:

H. K. Mulford Co.

Antivenin (Nearctic Crotalidae)—Mulford.

NEW AND NON-OFFICIAL REMEDIES

Neonal.—N-Butylethylbarbituric acid.—Neonal differs from barbital (diethylbarbituric acid) in that one of the ethyl groups of the former is replaced by a normal butyl group. The actions and uses of neonal are essentially similar to those of barbital, but it is about three times as active as the latter; hence it is used in correspondingly smaller doses. It is claimed that it exerts a sedative action to an exceptional degree, and that it is useful therefore in high nervous tension, neuroses and other conditions in which a sedative is required. Neonal is supplied in powder and in 0.1 Gm. tablets. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., June 4, 1927, p. 1802).

Pollen Extracts—Cutter.—These are now marketed in capillary tubes and in packages consisting of three vials representing graduated concentrations. In addition to the products listed in New and Non-official Remedies, 1927, p. 34, the following have been accepted: Alkali Weed Pollen Extract—Cutter; All Scale Pollen Extract—Cutter; Box Elder Pollen Extract—Cutter; Burning Bush Pollen Extract—Cutter; Corn Pollen Extract—Cutter; Foxtail Pollen Extract—Cutter; Mountain Cedar Pollen Extract—Cutter; Tumbleweed Pollen Extract—Cutter; Western Water Hemp Pollen Extract—Cutter. Cutter Laboratory, Berkeley, Calif.

Pollen Extracts (Glycero-Saline)—Mulford.—Liquids obtained by extracting the dried pollen of plants with a liquid consisting of 66⅔ per cent of glycerin and 33⅓ per cent of saturated sodium chloride solution. For a discussion of the actions and uses see Allergic Protein Preparations (New and Non-official Remedies, 1927, p. 23). Pollen extracts (glycero-saline)—Mulford are marketed in bulk treatment packages and in treatment sets consisting of: First series (dose 1 to 5, inclusive); second series (doses 6 to 10, inclusive); third series (doses 11 to 15, inclusive); complete series (doses 1 to 15, inclusive); fourth series (doses 16 to 20, inclusive). The following preparations have been accepted: Lamb's Quarters Pollen Extract (Glycero-Saline)—Mulford; Ragweed Pollen Extract (Glycero-Saline)—Mulford; Timothy Pollen Extract (Glycero-Saline)—Mulford; Wormwood Pollen Extract (Glycero-Saline)—Mulford. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., June 11, 1927, p. 1891).

Ethylene—C. L. P.—A brand of ethylene for anesthesia—N. N. R. For a discussion of the actions and uses see New and Non-official Remedies, 1927, p. 50. Certified Laboratory Products, Glendale, Calif.

Protein Extracts Diagnostic—P. D. & Co.—In addition to the products listed in New and Non-official Remedies, 1927, p. 40, the following have been accepted: Alfalfa Pollen Protein Extract Diagnostic—P. D. & Co.; Bean (Kidney) Protein Extract Diagnostic—P. D. & Co. Parke, Davis & Co., Detroit.

*Typhoid Vaccine (Prophylactic) (New and Non-official Remedies, 1927, p. 369).—This product is also marketed in packages of one 20 c.c. vial containing 1,000 million killed typhoid bacilli per c.c. Parke, Davis & Co., Detroit.

Typhoid-Paratyphoid Vaccine (Prophylactic) (New and Non-official Remedies, 1927, p. 369).—This product is also marketed in packages of one 20 c.c. vial containing 1,000 million killed typhoid bacilli and 750 million each of killed paratyphoid bacilli A and B per c.c. Parke, Davis & Co., Detroit.

Horlick's Maltose-Dextrin Milk Modifier.—A mixture containing approximately: maltose, 63 per cent; dextrin, 19.5 per cent; protein, 11.5 per cent; fat, 1.4 per cent; moisture, 2 per cent; and ash, 2.6 per cent. On the claim that maltose is more readily assimilable than other forms of sugar, this product is proposed to supplement the carbohydrate of cow's milk. Horlick's Malted Milk Corporation, Racine,

Wis. (Jour. A. M. A., June 18, 1927, p. 1967).

B. Acidophilus Milk—Fairchild.—A whole milk cultured with *B. acidophilus*. It contains not less than fifty millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1927, p. 216, "Lactic Acid-Producing Organisms and Preparations." Fairchild Bros. & Foster, New York. (Jour. A. M. A., June 25, 1927, p. 2035).

PROPAGANDA FOR REFORM

"Liquid Arvon" Dermatitis.—Liquid Arvon, put out by the R. L. Watkins Company, Cleveland, has been reported to contain 4.84 per cent of alcohol by volume, 1.49 per cent of glycerin, and 0.42 per cent of potassium carbonate, with salicylic acid present and probably resorcinol. This hair tonic preparation is reported to have caused severe dermatitis of the scalp. (Jour. A. M. A., May 7, 1927, p. 1505).

Report on Window Glass Substitutes.—The Council on Physical Therapy publishes a report of work carried out under its auspices, to determine the efficiency of certain window glass substitutes for transmitting the antirachitic rays of sunlight. The transmission of ultraviolet rays was determined both by spectroscopic analysis and by the biologic effects of the transmitted light on the growth of chickens. The following materials were tested: Vitaglass (transparent), Cel-O-Glass, Flex-O-Glass and Corning Glass. Vitaglass and Corning Glass are stated to be true glasses. Celoglass is composed of wire-mesh screen filled with an apparently celluloidinous material. Flexoglass is a thin, fairly loosely woven cloth treated with a paraffin-like substance. The Vitaglass and the Celoglass transmitted a large percentage of the sun's ultraviolet rays since the chickens reared behind these glasses showed similar development as those which received ultraviolet radiation from the artificial source. Chickens which received the sunlight through Flexoglass did not show the same growth as did the irradiated controls, but did gain more rapidly than those receiving sunlight through window glass. The Corning Glass was received too late for the biologic test, but from the spectroscopic measurements it is evident that this glass is equal to the best of those tests in its ability to transmit the antirachitic rays of the sun. The study leads to the conclusion that there are now available materials for glazing windows which do not possess the fault of window glass in excluding the health-giving rays of sunlight. (Jour. A. M. A., May 14, 1927, p. 1562).

Poisonous Effects of Oxygen.—In animal experiments a concentration of oxygen of more than 70 per cent of one atmosphere may produce symptoms of oxygen want. The manifestations are drowsiness, anorexia, loss of weight, dyspnea, cyanosis and, finally, death. Postmortem examination showed that diffuse hemorrhagic edema had developed, with such injury to the diffusion membrane of the lung that, in spite of the increased head of pressure, the arterial blood remained unsaturated. With this knowledge of the effects of over-rich oxygen mixtures, oxygen may be used to greater advantage therapeutically. (Jour. A. M. A., May 14, 1927, p. 1570).

Injection Treatment of Varicose Veins.—In the face of growing enthusiasm for the treatment by injection of varicose veins of the leg and hemorrhoids, it is well to consider a recent report of a death after injection treatment of varicose veins. A man, aged 60, who had dilated veins of the left leg, was treated at short intervals with five injections of a 20 per cent sodium chloride solution. Serious symptoms developed, but the patient overcame these. However, about one month after the injection treatment he died suddenly of embolism of the pulmonary artery. One case proves nothing, but one disaster is an indication for caution. (Jour. A. M. A., May 14, 1927, p. 1571).

Effects of Cinchophen.—Cinchophen is not directly depressant to the heart muscle. The circulatory collapse produced by the toxic doses is due to effect on the vagus and vasomotor centers. It occasionally produces local irritation in the digestive tract, as indicated by anorexia, nausea, and other digestive disturbances. There may be scarlatiniform, urticarial or purpural skin eruptions, and edema with fever. In large doses it may produce albuminuria, though less so than salicylate. The administration of sodium bicarbonate is believed to lessen gastric irritation. A liberal amount of water should always be given along with cinchophen. The use of neocinchophen obviates the gastric irritation and lessens the possibility of toxic effects. (Jour. A. M. A., May 14, 1927, p. 1586).

Prevention of Scarlet Fever.—The ideal procedure in the case of a child exposed to scarlet fever is to make a skin test to determine whether the child is susceptible or immune to scarlet fever and at the same time make nose and throat cultures to learn whether the child is infected with hemolytic streptococci. If the skin test is entirely negative, further preventive measures are not indicated unless the cultures show the presence of hemolytic streptococci, in which case the child should be kept away from other susceptible children. In case the skin test is positive, the next step depends on the results of the nose and throat cultures. If these are negative and further exposure can be avoided, active immunization with toxin should be begun at once. If the skin test and the nose and throat cultures are positive, the administration of a prophylactic dose of scarlet fever antitoxin is justified. (Jour. A. M. A., May 14, 1927, p. 1587).

Lens Antigen.—In 1924 the H. K. Mulford Company requested consideration of "Lens Extract," by the Council on Pharmacy and Chemistry, presenting as evidence for the value of the preparation the reports by A. E. Davis. The Mulford Company was informed that the evidence which it had submitted had been considered by the Council; that the referee to whom the product was assigned had consulted with a number of ophthalmologists, all of whom had agreed that the evidence for its usefulness was not acceptable, and that the Council had postponed the consideration of Lens Extract until more evidence becomes available to demonstrate its therapeutic value. Since then Dr. Davis has published two further articles. The Mulford Company has, however, not requested further consideration of its "Lens Extract," and the Council has taken no further action regarding it. (Jour. A. M. A., May 28, 1927, p. 1749).

E. E. Paddock.—According to available records, E. E. Paddock, of Kansas City, was born in 1867, obtained a diploma from the Kansas City Medical College in 1895, and was licensed in Missouri the same year. Since that time he has practiced in a number of Missouri towns. Paddock's principal quackish activity has been as an alleged specialist in gall-bladder disease. The follow-up paraphernalia conforms strictly to the orthodox methods of the mail-order quack. Those who answer his "gall-stone cure" advertisements, but fail to send in an order, are circularized later by the Lyle Chemical Company detailing a home treatment for "painful menstruation." This, at least, was the case about a year ago.

As an advertiser, Paddock has patronized such publications as the *Saturday Blade*, *Police Gazette*, *Chicago Ledger*, *Household Guest*, and the *Chicago Herald and Examiner*. (Jour. A. M. A., May 28, 1927, p. 1749).

Felsol.—In the advertising of the American Felsol Company, Felsol is claimed to have the following composition: "Metozin 0.9 (containing Phenazon 0.25, Anilipyrin 0.4, Jodopyrin 0.25), caffein 0.1, digitalis and strophanthus glycosides 0.0015 and the alkaloid of lobelia inflata 0.005." Felsol is a typical illustration of an irrational shotgun mixture. One of the claimed ingredients, metozin, is stated to contain phenazon (antipyrine), anilipyrin (a mixture of antipyrine and acetanilid) and iodopyrin (a compound of antipyrine and iodine). In addition to these multiple antipyretic ingredients, Felsol is claimed to contain four other active drugs. The advertising refers to Felsol as a "harmless remedy" which may be given "for any kind of bronchial or cardiac asthma, without the necessity on the part of the physician to embark on long theoretical considerations as to the underlying cause of the attack." A product that contains preparations of digitalis, strophanthus and lobelia is not a "harmless" remedy. The recommendation for the indiscriminate use of this product is to be strongly condemned. A recent circular shows that the firm is increasing the danger of indiscriminate use by exploiting it directly to the public. (Jour. A. M. A., May 28, 1927, p. 1750).

The Creoco Remedy Co.—D. H. Brown, M. D., of Jacksonville and St. Augustine, Fla., is a negro quack who for years has been swindling consumptives. This man's particular piece of quackery has in the past gone under the name "Dr. Brown's New Consumption Remedy" and he made his appeal especially to those unfortunate members of his own race who were afflicted with tuberculosis. More than ten years ago Brown was prosecuted under the Federal Food and Drugs Act because he was crude enough to make claims on the trade package of his nostrum to the effect that it was a remedy for consumption, pneumonia, and all diseases of the lungs. Subsequently Brown ceased making fraudulent claims on the trade package, but continued to sell his worthless nostrum, making the same false and fraudulent claims in newspaper advertisements and circulars. In 1923 a fraud order was issued by the Post Office Department against D. H. Brown and his concern known as the Magnolia Remedy Co. Then Brown attempted to continue the business by creating the Creoco Remedy Co., selling the same preparation under the name of this company, and calling the preparation "Creoco". Now a supplemental fraud order against the Creoco Remedy Co. has been issued. (Jour. A. M. A., April 23, 1927, p. 1340).

International Health Institute.—During the past few months the medical profession has been flooded with letters from the "International Health Institute, Inc.," 2061 Broadway, New York City. According to its "sales talk," the International Health Institute purposes to sell to the public a urinalysis and periodic physical examination service "supplemented with a complete course in body-building and rules of right living." While this is the nominal *raison d'etre* of the concern, evidence is accumulating to confirm the suspicion that the International Health Institute, Inc., is primarily a promotion scheme. Letters are sent to physicians stating that the "Institute" desires to establish "a resident physician and member of our Advisory and Hygiene Reference Board"; invites the physician to join and to purchase stock. It is stated that the first source of income is the service that is to be recommended by the International Health Institute in selling to the public a periodic physical examination and urinalysis, for which the institute will charge $37.50, but it is explained that a greater opportunity for financial betterment will come from the activities of the International Health Institute in recommending to the lay subscribers that they use certain health foods; certain "approved exercising devices"; certain "hygienic appliances"; and certain books all of which the institute will sell. (Jour. A. M. A., April 30, 1927, p. 1435).

"Iodex" in Thyroid Disturbances.—A pamphlet published by the Pharmacal Advance Press, the house organ of Menley and James, Ltd., the firm that sells Iodex is devoted to promoting the use of iodex ointment in the treament of systemic goiter by rubbing ointment into the skin over the thyroid gland twice a day, and also recommending iodex ointment for a number of other pathologic conditions. The Council on Pharmacy and Chemistry has reported that the preparation was practically devoid of free iodine, that its composition was incorrectly stated, that the total iodine content was only about three-fifths of the total amount of iodine claimed, and that therefore its use for securing iodine effects is unwarranted. 'Almost any intelligent physician knows that the attempt to treat systemic goiter by rubbing such an ointment into the skin over the goiter is preposterous. However, this is but one of many ridiculous statements in the pamphlet mentioned. (Jour. A. M. A., April 30, 1927, p. 1438).

Uriseptin.—An examination of uriseptin made in the A. M. A. Chemical Laboratory was published in 1908. The report brought out that while uriseptin was claimed to contain formaldehyde combined with lithium in the presence of a concentrated extract of corn silk and couch grass, the examination showed that uriseptin was marketed under a deliberately false claim, in that it did not contain the lithium formaldehyde compound, but instead contained hexamethylenamine (methenamine) as its chief constituent, and also lithium benzoate. (Jour. A. M. A., April 30, 1927, p. 1438).

What is an Antiseptic?—While physicians understand that a germicide may produce effects on an infected area in a brief period which can be produced by an antiseptic only through prolonged contact, the general public understands these terms as synonymous. In consideration of this condition, the U. S. Bureau of Chemistry, which is charged with the enforcement of the Food and Drugs Act, has recently come to the conclusion that the term "antiseptic" when used in the labeling of a medicinal product is objectionable unless the preparation when used as directed will actually destroy micro-organisms. The medical profession will, of course, agree at once that the position taken by the Bureau of Chemistry is in the public interest. (Jour. A. M. A., April 30, 1927, p. 1420).

The Origin of Vitamin D.—The antirachitic substance, vitamin D, occurs in some fish oils—notably in cod-liver oil—in egg yolk fat, and to a small extent in milk fat. As a rule the vegetable fats are not antirachitic. A few instances of undoubted potency in oils of plant origin have been ascribed to the effect of solar irradiation of the products incident to their commercial preparation. This is true of coçoanut oil prepared from sun-dried copra. Whereas the other vitamins appear to originate in the vegetable kingdom, this is not the case with vitamin D. Experiments carried out to learn the

origin of vitamin D in the cod-fish, raise the question as to whether vitamin D cannot actually be synthesized by certain species. These experiments also revealed that the oils of the herring and sardine rival the cod in antirachitic potency. (Jour. A. M. A, June 4, 1927, p. 1807).

Prodigaluz, a Spanish Nostrum Sold to Gullible Americans.—A nostrum for the alleged cure of all diseases of the eye has been exploited during the past year in some American newspapers and magazines under the name of "Prodigaluz". The preparation was claimed to be a general specific for diseases of the eye and to cure trachoma, ulcerations of the cornea, cataracts, gonorrheal conjunctivitis, progressive myopia, etc. The federal authorities reported the preparation to be a slightly turbid liquid, having a winelike odor, and containing alcohol, potash, zinc sulphate and tannin. The Post Office Department issued a fraud order which will prevent the exploitation of this nostrum through the mails. (Jour. A. M. A., June 4, 1927, p. 1831).

Bulgara Tablets—H. W. & D., Culture of Bacillus Bulgaricus—Lederle, Culture of Bacillus Bulgaricus—Fairchild, Galactenzyme Tablets, Lactampoule, Lactic Bacillary Tablets—Fairchild, and Vitalait Culture of Bacillus Bulgaricus Omitted from N. N. R.—The Council on Pharmacy and Chemistry decided to retain bacillus bulgaricus preparations in New and Non-official Remedies, provided that the claims for these were revised to show such preparations to be of value only in the preparation of soured milk, and, further, that all claims for their intestinal implantation and for their value as external applications be discontinued. The Council reports that the following products have been omitted from New and Non-official Remedies because acceptable revisions of the claims were not made: Bulgara Tablets—H. W. & D. (Hynson, Westcott & Dunning); Culture of Bacillus Bulgaricus—Lederle (Lederle Antitoxin Laboratories); Culture of Bacillus Bulgaricus—Fairchild, Lactampoule, Lactic Bacillary Tablets—Fairchild (Fairchild Bros. & Foster); Galactenzyme Tablets (Abbott Laboratories); and Vitalait Culture of Bacillus Bulgaricus (Vitalait Laboratory of California). (Jour. A. M. A., June 4, 1927, p. 1831).

The Synthesis of Thyroxin.—The announcement by Harington, in 1926, that thyroxin, instead of being a compound of tryptophan, is a tetraiodo derivative of the p-hydroxyphenyl ether of tyrosine, has been followed by a determination of its constitution. Following this, Harington and Barger prepared synthetic thyroxin. This has been shown to be identical with natural thyroxin. Thus, the first artificial production of a naturally occurring biologic product, the active principle of the thyroid gland has been accomplished. (Jour. A. M. A, June 11, 1927, p. 1892).

Diabetic Foods.—A recent food inspection decision of the U. S. Department of Agriculture revokes the official definition of so-called diabetic foods, thus automatically placing such preparations in the class of drugs. The government holds that references to any disease condition in the labeling of such articles implies to the public that they are efficacious treatments, and it therefore asks manufacturers and distributors to omit any such references from their trade packages. An investigation showed that "diabetic foods" were being held out to sufferers from diabetes as treatments for their condition rather than as mere diabetic aids in the management of the disease. The action taken is a gratifying official support of the efforts of the Council on Pharmacy and Chemistry to convince manufacturers that therapeutic recommendations should not have a place on a trade package. However, the Council has taken a liberal attitude and does not object to the naming of diseases on trade packages of medicinal foods, or to a name implying the use of the product in diabetes, provided the advertising makes it clear that the product is not offered as a cure or even as a remedy for the disease. The greater stringency of the attitude of the government arises, no doubt, from the fact that it is acting on the basis of a law, the letter of which refers only to the trade package and label. (Jour. A. M. A., June 11, 1927, p. 1895).

The Florazona Fraud.—The Postmaster General has issued a fraud order against the Florazona Corporation, New York City, debarring it from the use of the mails. The "Corporation" exploited Florazona, which was a bath powder claimed to bring about reduction of weight. The federal chemists found the preparation to be essentially sodium thiosulphate, with a small amount of baking soda and a trace of iodides and perfume. It was shown that the package of Florazona, which sold for $3.50, could be manufactured for about 17½ cents. As is common in the advertising of fat-cure swindles, the advertisements for Florazona stressed the claim that, when using the preparation, it was unnecessary to exercise or to diet. Yet, as is also usual in the sale of such fakes, after the purchaser has paid her money, she found that dieting was suggested. (Jour. A. M. A., June 11, 1927, p. 1920).

The Cunningham Tank Treatment.—For some eight years Dr. O. J. Cunningham, of Kansas City, Mo., has been treating certain conditions by putting patients in a tank, under air pressure varying from 10 to 50 pounds to the square inch above ordinary atmospheric pressure. Patients are kept in the tank from a few hours to a month. Dr. Cunningham's thesis is that diabetes mellitus, pernicious anemia and carcinoma are due to pathogenic bacteria of the anaerobic type, and that the oxygen content of the tissues is greatly increased when the patients are put in the tank containing the compressed air. It does not appear that Dr. Cunningham's observations have been confirmed. There is reason to believe that Dr. Cunningham has allowed enthusiasm to run away with judgment. (Jour. A. M. A., June 11, 1927, p. 1921).

Book Announcements

The New Medical Follies. An Encyclopedia of Cultism and Quackery in These United States, with Essays on the Cult of Beauty, The Craze for Reduction, Rejuvenation, Eclecticism, Bread and Dietary Fads, Physical Therapy, and a Forecast as to the Physician of the Future. by MORRIS FISHBEIN, M. D., Editor of the *Journal of the American Medical Association* and of *Hygeia, The Health Magazine*, New York. Boni and Liveright. 1927. 235 pages. Cloth. Price, $2.00.

Lippincott's Pocket Formulary. By GEORGE E. REHBERGER, M. D., Author of Lippincott's Quick Reference Book. Philadelphia and London. J. B. Lippincott Company. Pocket sized. Leather bound.

United Fruit Company. General Offices: Boston, Massachusetts. MEDICAL DEPARTMENT. FIFTEENTH ANNUAL REPORT. 1926. 355 pages. Paper.

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Editorial

Intravenous Therapy.

It is a salutary sign of medical progress, when an organization of medical men appoints a committee of responsible members to investigate a medical problem and to submit a report of the investigation to the profession. This method of searching for the facts has much to recommend it, particularly at this time when so much confusion exists in important medical and surgical procedures. A consensus of medical minds possesses an untold influence. The crystallization of medical and surgical opinions may be obtained in effective form, by the evaluation of medical and surgical publications by responsible medical bodies. In this day when publications are voluminous, a medium for separating the wheat from the chaff is desirable and important, if not a necessity. In an effort to arrive at a proper judgment of the values of intravenous therapy, a committee was appointed by the Therapeutic Research Committee of the Council on Pharmacy and Chemistry. The committee's report is worthy of a first hand perusal. It is particularly worthy of careful reading by medical practitioners who are following this line of therapy. Much of what is written is accepted by all and to the whole of the report general agreement is given.

Editorial reference of this paper* is made with freedom because of the importance of the subject.

*J. A. M. A., Vol. 88, No. 23, page 1798.

INDICATIONS

I. For rapidity of action:

In emergencies: in cases of shock, toxemia and hemorrhage. In these conditions saline, glucose infusions, or less frequently, infusions of gum glucose or Locke's solution are of immediate value in restoring blood volume and in overcoming dehydration.

In severe acidosis: in diabetic coma, for instance, the infusion of saline sodium bicarbonate or glucose solution or a combination of them may be needed as a life saving measure. Insulin may be needed, also, intravenously in connection with the foregoing treatment.

In severe forms of tetany: intravenous use of calcium chloride in proper dilution may be needed.

In increased intravenous pressure: hypotonic solutions of sodium chloride may be administered intravenously.

In acute circulatory collapse: a slowly injected weak solution of epinephrine in physiologic sodium chloride solution may be given.

In sudden heart failure: intravenous administration of ouabain or of amorphous strophanthin may be resorted to; all but moribund cases have been resuscitated by this measure.

In severe malaria: quinine may be given intravenously—with caution.

In severe diphtheria or in neglected cases of this disease: intravenous use of antitoxin has been resorted to and some cases have responded to it favorably.

II. For intensity of action.

In conditions such as diphtheria, tetanus, meningitis, streptococcus infection (scarlet fever), pneumonia, intravenous administration of antitoxic and immune serums may be required when absorption by subcutaneous or intramuscular route is too slow. Such a procedure as this may be needed in order to secure greater intensity of action. In non-specific proteins, administered intravenously, there is induced protein shock.

CONTRAINDICATIONS

1. It is obvious that intravenous therapy is contraindicated when results of equal value may be obtained by usual unquestionable routes. Often too, intravenous administration is contraindicated if conditions of emergency do not exist and less dangerous routes may be as well, if not more safely used.

2. In weakened patients, in the aged, in pa-

tients with hypertension, in patients with heart disease; in patients hypersensitive to one or more proteins; and in patients with drug idiosyncrasies, intravenous therapy is contraindicated, or at least, is worthy of mature consideration. Certain agents are unsuitable for intravenous administration:—(a) substances of complex composition, (b) imperfectly purified substances, (c) substances which are definitely acid or markedly alkaline, (d) substances which do not yield clear solutions in aqueous mediums or mediums which fail to yield satisfactory colloidal solutions, (e) emulsions of fats and oils: (f) suspensions, unless fine and very dilute, and (g) very potent pharmacologic agents.

3. For volume of dose. In cases when saline and glucose solutions, serums, and substitutes, in large volume are indicated, the intravenous route is advisable. When volumes of 100 c.c. or more are required, the venous is better than the intramuscular or subcutaneous route. Simple hypodermoclysis is an exception here.

4. To avoid irritation or destruction of tissue at the site of injection, the vein is used in injecting arsphenamine, neoarsphenamine, quinine, dye stuffs, colloidal metals, alkali, and other irritants.

5. To obtain direct action in the blood stream, quinine in malaria, dyes and colloidal metals in sepsis are used.

Technical Considerations in Intravenous Therapy

Only cursory comment can be made here upon a matter of extreme importance and large detail. A few observations may be pertinent, however, following the line of publication before us.

Solutions employed in intravenous administration are of first importance. Distilled water may contain pyogenic substance; although not present in freshly distilled water, pyogenic contamination may appear after a few hours, and from such patients may get reactions that are untoward. Freshly distilled water carefully protected is safe and is best for venous administration. Triple distilled water, not referred to in the article before us, is being employed now but as it is only of recent use, the efficacy of it deserves study. Agents or drugs used in intravenous therapy should be of assured purity. Serious systemic reactions if not deaths, have resulted from ill advised use of drugs. Even in cases of malarial fever, intravenous administration of quinine, a drug so thoroughly indicated in this disease, sudden death has occurred.

All solutions for venous administration should be as near as possible to reaction of normal blood, which is slightly on the alkaline side of neutrality. Should it be impossible to attain this state of approximation of normal alkalinity of the blood, administration should be made in minute amounts; and should be slowly and cautiously given. Of course, in the instance of profound toxemia, as acidosis, more freedom may be felt in administration of alkaline solutions. Isotoncity of the solutions with the blood are important in use of large volumes of fluids in the vein. Rate of injection is a matter of prime significance. Generally, slow and cautious introduction of the fluid in the vein is important. There is danger of overwhelming the heart; of the disturbance of physiologic reactions of the blood and fluids in the tissues; of the menace of a too great concentration of drugs upon heart, brain, liver. kidney. As a general rule, slow intravenous administrations permit of compensatory adjustments which make for greater safety.

Meticulous care should be employed by the physician. The needle should be as small as is compatible with the nature and the quantity of agent to be administered. Care should be exercised not to allow fluid to escape into perivascular tissue. Calcium solutions have been known to produce serious slough and abscesses have followed poor administration of salvarsan and other drugs.

Angina Pectoris, Coronary Thrombosis and Breast Pang.

Much speculation as to the real factors at work in angina pectoris has been indulged in. That rather clear cut cardiac syndrome evinces itself by the outstanding symptom of pain. The nerve routes through which the pain-stimuli pass are yet in question. The factors that make or create the stimuli, in or about the heart, are likewise under discussion. Probably much light has been shed upon the subject by recent discussion. Professional opinion has not yet been able to reach a full conclusion. But the recognition of coronary thrombosis has done something to clear up a group of heart attacks that had not been altogether consistent with angina pectoris. Observation of a large number of cases of angina pectoris leads to the thought that the main

pathologic factors in these cases center around aortic valve-disease, aortic aneurysm, sclerosis of coronaries and myocardial degeneration; and often in association with general arteriosclerosis and cardiac hypertrophy. At once, it is quite safe to say, that so wide a range of factors may bring about, in symptomatology, a varied assortment of symptoms, in a large series of cases of angina. With this possibility in view, it is important to observe, also, that there are certain known disease entities, which simulate angina pectoris, but which are not cases of angina pectoris as we understand the disease today. There may be pain over the precordium and this may take on certain similitudes of angina pectoris. One of these conditions may be considered from the standpoint of pathology to be of the nature of that sort of pathology as is often found in angina pectoris, but which possibly failed to display angina pectoris symptoms during that phase of its evolution. Through some compensatory circumstances of function, hearts eventually, then, showing symptoms of definite and clear cut pain over the precordium and radiating down the arm or arms, with coronary thrombosis, may be easily taken for angina pectoris. But coronary thrombosis is not angina pectoris; and it must not be so taken. Angina pectoris cases may show no serious sclerotic or thrombotic changes in the coronary system of vessels. There are cases of angina pectoris, which have very little if any disease of coronaries, either at the openings or in the walls of the vessels themselves.

Likewise, precordiac pain or pain upon the left side and radiating to shoulder or left arm may appear in patients with chronic or subacute pleurisy, particularly in tuberculosis patients. Such patients may fear angina, especially in obesity and overweight. The differentiation is made by inquiry in cardiac status and function. Pains resembling those of angina pectoris may occur in patients with neuritis, following focal infection or associated with bursitis on left arm, pains may involve areas over the left chest, subjective of a possibility of angina pectoris, but a careful study of cardiac status and the etiologic factors, as well as the order and evolution of the pain syndrome, clears the diagnosis.

Pain probably leads all other symptoms of disease, in its urgency and bringing the patient to the physician. Pain brings the patient to the physician quickly—if the degree and intensity of it is great enough. There are varieties of pain, however, which are harbingers of serious pathology, which do not possess intensity or severity. This lack of degree may be the reason why patients fail to seek advice of the physician and permit serious maladies to progress to the borderline of the incurable before medical advice is sought. Lack of knowledge as to the nature and significance of pain is probably the cause of this. Probably in no region of the body is a study of more importance than that of the breast. It is both important to practitioners and laity as well. Practitioners must be alive to its significance, keenly alive to its possible nature;—intimately in touch with its various manifestations. No adequate educational program can be instituted among the laymen until practitioners themselves, everywhere, have acquainted themselves with the facts involved. After that, symptoms arising over the precordium, now attributable to indigestion or "intercostal neuralgia" or pleural "stitch" or "neuritis" of the arms, or "rheumatism" of the chest, etc., will take upon a more accurate meaning and bring to light important adventitious states of the heart, in stages amenable to adjustment or cure.

To repeat, naggnig pain may be as serious as the severe pain in its importance. Pain, that brings the patient to the physician in limited and definite boundaries, is an advantage; while, pain that is lacking of severity and that may be relieved by some simple home procedure, may be kind to the sensibilities of the patient, but a menace to the patient's life. Breast pains are all significant and important. The public knows the popular idea of pain in the right quadrant of the abdomen and around the navel, but fails, as yet, to understand in any adequate sense the real importance of pains emanating in left upper quadrant of the thorax. If one has a pain in the right abdomen, popular opinion suggests appendicitis, and the opinion of the physician is sought on the possibilities of this malady. The same public appreciation of breast pangs should be attained by the laity, as, by this, early symptoms of serious cardiac cases may be recognized.

Ephedrin.

A Chinese herb called *ma huang* is the source of ephedrin. This active principle has been thoroughly investigated scientifically, both

from the pharmacologic and clinical sides. These may be briefly noted.*

Ephedrin and Blood Pressure.—Intravenour injection in the circulation of the dog has a marked and prolonged increase in the blood pressure. In one instance 5 mg. caused an immediate rise of blood pressure from 75 to 200 m.m.

Ephedrin and the Heart. Coincident to increase of blood pressure there occurs in animals a definite cardiac acceleration. The pulse rate increased from 164 to 264 beats per minute in one animal. There was noted also definite augmentation in the strength of contractions and an increase in excursion of the heart. Over-dosage or repeated dosing exerted harmful effects. Extrasystoles and acute dilatation occurred.

Ephedrin and Blood Vessels. In addition to cardiac acceleration and increase of blood pressure, vasoconstriction was marked, particularly in splanchnic circulation.

Ephedrin and Smooth Muscle. Smooth muscle relaxed only when ephedrin was given in relatively strong solutions as composed with adrenalin.

Chen and Schmidt observed that smooth muscle of the uterus was stimulated. The bronchus was relaxed.

Ephedrin and Salivary Flow. Chen and Schmidt reported that ephedrin increased the flow of saliva where atropine had been given.

Local Effect of Ephedrin on Muscular Membrane. Ephedrin like adrenalin, when locally applied, relaxed smooth muscle of the intestines and caused vasoconstriction when applied to mucous membrane.

*Reference. Notes on Sulphate of Ephedrin. Rudolf and Graham (Am. J. M. Sc., March, 1927.)

News Notes

Virginia State Board of Medical Examiners.

At the examinations of the Board in Richmond, the middle of June, all applicants for the full examination passed. Several others came up for part of the examination and some for admission to practice in Virginia by reciprocity. Names licensed at these examinations are as follows:

Dr. Edward Lee Alexander, Richmond, Va.
Dr. Rufus Carter Alley, Richmond, Va.
Dr. Geo. Basil Arnold, University, Va.
Dr. Eugene Anthony Bain, Petersburg, Va.
Dr. Wm. Linwood Ball, Richmond, Va.
Dr. Jas. Boulware, University Hospital, Charlottesville, Va.
Dr. Thos. S. Bowyer, Emory, Va.
Dr. Hendrick A. Bracey, Memorial Hospital, Richmond, Va.
Dr. Wm. Cralle Brann, Marine Hospital, Stapleton, New York.
Dr. Wm. Turbin Holland Brantley, Memorial Hospital, Richmond, Va.
Dr. Harvey Christian Brownley, Sheltering Arms Hospital, Richmond, Va.
Dr. Abram Buck, Norfolk, Va.
Dr. Jas. Melvin Campbell, Saltville, Va.
Dr. Garland N. Carter, Memorial Hospital, Richmond, Va.
Dr. Virgil Orion Choate, Martha Jefferson Hospital, Charlottesville, Va.
Dr. Edward Bentley Cox, Louisville, Ky.
Dr. Sanders Graham Davidson, Roanoke Hospital, Roanoke, Va.
Dr. Henry Charles Davis, Honaker, Va.
Dr. Albert Brown Dickey, Prescott, Arkansas.
Dr. Robert Lemon Eastman, Fredericktown, Ohio.
Dr. Wm. Clarence Eikner, University Hospital, Charlottesville, Va.
Dr. John Roland Ellison, Jr., Suffolk, Va.
Dr. Herman Stuart Fletcher, Richmond, Va.
Dr. Seth Gayle, Jr., Richmond, Va.
Dr. Antonio Gentile, University, Va.
Dr. John Russell Gill, Emporia, Va.
Dr. Louis Holmes Ginn, Jr., Berryville, Va.
Dr. Marshall P. Gordon, Jr., Richmond, Va.
Dr. Edward W. Gray, Richmond, Va.
Dr. Wm. Beecher Greene, Lawrenceville, Va.
Dr. Earl Joseph Haden, East Leake, Va.
Dr. John Richard Hamilton, Johnston-Willis Hospital, Richmond, Va.
Dr. Andrew DeJarnette Hart, Jr., North Garden, Va.
Dr. Leo Eugene Hayes, Richmond, Va.
Dr. Harry M. Hayter, Meadow View, Va., (reciprocity with National Board).
Dr. Wm. Carey Henderson, Hospital Division, Medical College of Va., Richmond.
Dr. Phillip James Hirshman, Brooklyn, N. Y.
Dr. Charles Roy Hoskins, Jr., Saluda, Va.
Dr. Walter O. House, Norfolk, Va.
Dr. Jos. Warren Hundley, Jr., Richmond, Va.
Dr. Arthur D. Hutton, Abingdon, Va.
Dr. Leo Lemmer Jacobs, Wollington, N. C.
Dr. Ewell Claude Jamison, Memorial Hospital, Richmond, Va.
Dr. Jeannette Morris Jarman, Memorial Hospital, Richmond, Va.

Dr. Elliott W. Johnston, Richmond, Va.
Dr. Sidney F. Johnston, East Radford, Va.
Dr. Jeremiah Robert Johnston, Memorial Hospital, Richmond, Va.
Dr. Orvin C. Jones, Memorial Hospital, Richmond, Va.
Dr. Oliver Lee Jones, Lewis-Gale Hospital, Roanoke, Va.
Dr. John Wesley Jones, Portsmouth, Va.
Dr. James Woodfin Keever, Memorial Hospital, Richmond, Va.
Dr. Louis Selnik Leo, Norfolk, Va.
Dr. Morris S. Libovitch, New York City.
Dr. Henry S. Liebert, Richmond, Va.
Dr. Ellis Dill Lineberry, Cliffview, Va.
Dr. Athey R. Lutz, Orkney Springs, Va.
Dr. Clabe W. Lynn, Petersburg Hospital, Petersburg, Va.
Dr. Jos. T. Nuns McCastor, Richmond, Va.
Dr. Chas. Beasley Martin, Concord Depot, Va.
Dr. Geo. Ozen Martin, St. Lukes Hospital, Richmond, Va.
Dr. Blake Walden Meador, Richmond, Va.
Dr. Fred Ulmer Metcalf, Roanoke, Va.
Dr. Azby A. Milburn, Richmond, Va.
Dr. Kinloch Nelson, Richmond, Va.
Dr. Chas. Logan Newland, Richmond, Va.
Dr. Maury Claiborne Newton, Lewis-Gale Hospital, Roanoke, Va.
Dr. John Wesley Parker, Jr., Winston-Salem, N. C.
Dr. Jos. T. Peters, Richmond, Va.
Dr. Edward N. Pleasants, Richmond, Va.
Dr. Wm. J. Porter, Norfolk, Va.
Dr. Paul Ellis Prillaman, Callaway, Va.
Dr. Peter Booth Pulman, Fort Eustis, Va.
Dr. Irwin Rifkin, Grace Hospital, Richmond, Va.
Dr. Edward Boisseau Robertson, Danville, Va.
Dr. Edmund Eugene Robinson, Memorial Hospital, Richmond, Va.
Dr. Wm. Auburn Runkley, University, Va.
Dr. Anderson T. Scott, Richmond, Va.
Dr. Palmer Augustine Shelburne, Richmond, Va.
Dr. Otis Nonross Shelton, University, Va.
Dr. Harry McGregor Shipley, Richmond, Va.
Dr. Geo. S. Silliman (reciprocity with New York).
Dr. Walter Knapp Slack, University Hospital, Ann Arbor, Michigan.
Dr. Willard P. Smith, Newport News, Va.
Dr. Thos. Nathaniel Spessard, Richmond, Va.
Dr. Wm. Sylvester Stakes, Piedmont Sanatorium, Burkeville, Va.
Dr. Malcolm S. Stinnett, Memorial Hospital, Richmond, Va.
Dr. Geo. W. Surgent, University, Va.
Dr. Julian Earl Trainum, Richmond, Va.
Dr. Jas. Thomas Tucker, Memorial Hospital, Richmond, Va.
Dr. Henry Cromwell Turner, University, Va.
Dr. Judson Tompkies Vaughan, Ashland, Va.
Dr. Felix Burwell Welton, Richmond, Va.
Dr. Matthew James Walter White, Jr., Norfolk, Va.
Dr. Adam Duncan Ferguson White, R. F. D. No. 5, Lynchburg, Va.
Dr. John Cecil White, Memorial Hospital, Richmond, Va.
Dr. Claiborne Barksdale White, University, Va.
Dr. Alpheus Hartley Wood, Emporia, Va.
Dr. Victor K. Young, Bloxom, Va.

Petersburg Meeting, Medical Society of Virginia.

Little more than two months remain before the annual meeting of our State Society in Petersburg. Preparations for the meeting are advancing and we have every prospect for an excellent and interesting meeting. Cards have just been mailed all members asking for titles for voluntary papers. These should be sent to the Society's office. Dr. Stewart Roberts, Atlanta, Ga., will present a paper on "The Rheumatic Heart," and Dr. Wilburt C. Davison, recently of Baltimore, but now Dean of the Medical Department of Duke University, one on "Empyema in Infants Under Two Years of Age." The president's third invited guest has not yet been announced.

Dr. J. S. Horsley, president, has recently appointed two committees—one to investigate matters concerning the training of midwives in Virginia, composed of Dr. H. D. Howe, chairman, and Drs. Greer Baughman, J. Bolling Jones, Wm. R. Martin, H. G. Middlekauff, L. A. Calkins, and Mary E. Brydon, and the other, a committee to investigate the problems concerning the laboratory technicians of the medical profession, composed of Dr. Charles Phillips, chairman, and Drs. W. E. Bray and R. D. Caldwell, and Mr. A. H. Straus, of the State Board of Health, as an associate member. Both of these committees have been considering their work and will be prepared to report at the Petersburg meeting.

It will be well to make hotel reservations

early. If not acquainted with Petersburg, chairman of the hotel committee, Dr. E. L. McGill, will attend to this for you. The ladies in your family are expected to come with you and arrangement has been made for their entertainment.

Mrs. E. J. Nixon, president of the local auxiliary, is chairman of the Ladies' Committee. The visiting ladies will be carried on a historical pilgrimage one day, which will include visits to Blandford Church, the Crater and Confederate Tunnels, and the Peter Jones old trading station, and this trip will be followed by a tea. A dance and supper will be given at the Country Club one evening.

The scientific sessions will be held at the Petersburg High School and ample arrangement will be made for the various meetings of the House of Delegates and other gatherings. Reserve October 18-20, inclusive, to attend your State Society sessions and boost this meeting to your friends.

The Wise County Medical Society

Met in Norton, Va., July 13th, as guests of the Norton Medical and Dental Society. The meeting was well attended and several interesting papers were presented. In addition, there was a good clinic at the Norton Hospital. Dr. W. C. Brice, Stonega, and Dr. R. S. Kyle, Big Stone Gap, were elected members. Dr. G. B. Setzler, Norton, is president, and Dr. C. B. Bowyer, Stonega, secretary-treasurer.

Vacation Time—Recreation Time.

The old adage, "All work and no play makes Jack a dull boy" should be borne in mind by doctors as well as others at this time, the vacation time of the year. You prescribe it for your patients. You are as human as they and should "take your own medicine." You may work hard over your recreation, sight-seeing, automobiling, golfing, fishing, gardening, and what not, but it is getting out of the ruts and tedium of every day grind—however interested you may be in them—that clears the brain and rests the muscles and nerves and sends us back in better trim to take up our daily duties.

Don't let your chance for a recreation and vacation slip. Take the "ounce of prevention" rather than the "pound of cure."

United States Chief Factor in International Trade In Prepared Medicines.

The U. S. Department of Commerce, Chemical Division, states that the United States is the world's largest producer, consumer and exporter of prepared medicines. In 1925, the value of patent medicines and druggists' preparations manufactured in this country was nearly $320,000,000. During the same period our exports of this class of commodity had a value of nearly $20,000,000.

It is reported there is no country which the American drug salesman has not penetrated and the rapidly increasing volume of our export trade indicates that his efforts have been fruitful of results. The United States has has only three competitors in the international trade in prepared medicines—the United Kingdom, France and Germany.

Fully fifty per cent of the British shipments of medicinals are destined for the Far East and Africa; seventy-five per cent of them go exclusively to British possessions. Canada buys one-half again as much prepared medicines from the United States as from Great Britain. We sell the British approximately six and a half times more of these commodities than we buy from them. French exports of medicines and pharmaceuticals are distributed throughout the world and enjoy no distinct advantage in any particular region. Germany supplies prepared medicines especially to contiguous countries.

The United States sends its prepared medicines largely to the countries of the Western Hemisphere. The five largest individual markets are Great Britain, Cuba, Mexico, Columbia and Canada. Fully eighty per cent of all our exports in this line are destined for about fifteen English and Spanish speaking countries.

It is stated that the European markets and Canada are more highly educated as to the use of preventive medicines than other areas and are our best markets for specifics. The Latin Americans consume large quantities of tonics. Efforts are being made, however, to educate the people in these areas in the use of preventive medicines and the same is true of the natives of Far Eastern countries.

Juvenile Delinquency Decreased in Great Britain.

In March, 1927, the British Departmental Committee on the Treatment of Young Offenders reported a decrease of 26 per cent since 1913 in the number of charges proved against boys and girls in the juvenile courts, and of 69 per cent in the number of children and young persons sent to institutions, by

court order. In the past five years 40 certificated schools receiving such children were closed.

Dr. Albert C. Van Reenen,

Recently of Covington, Va., has moved to Mohawk, West Virginia.

Number of Drivers Color Blind.

According to the *Journal of the A. M. A.*, since the installation of the colored light traffic signs in Washington, it has been found that two per cent of the people applying for permits to drive in the District of Columbia are color blind and unable to distinguish the green from the red light. Such persons are refused permits to drive.

Dr. Sam Wilson

Has just returned to his home in Lynchburg, Va., after taking a special course in pediatrics at Harvard Post-Graduate Medical School.

Dr. Casper L. Woodbridge,

Who served as a medical missionary in China for several years, under the Southern Presbyterian Board, but was forced to return home several months ago on account of conditions in that country, has been visiting at Montreat, N. C. He expects to locate in Pulaski, Virginia, the latter part of August, for the practice of his profession. Dr. Woodbridge is an alumnus of Johns Hopkins Medical School, in the class of '21.

Dr. Charles F. Strosnider,

Goldsboro, N. C., has been elected president of the Chamber of Commerce of that city.

Dr. Courtney Edmond,

Clifton Forge, Va., recently underwent an operation for appendicitis.

Cuba Restricts Children's Attendance at Motion Picture Theaters.

A recent decree by the President of Cuba forbids the admission of children under 14 years of age to motion-picture theaters after 8:30 P. M., except on Sundays and holidays. Fines are imposed for violations of this decree, and the money collected will be used to purchase educational films for the public schools.

Dr. J. Belmont Woodson,

Lowesville, Va., has just been re-appointed by the Governor a member of the State diseased and crippled children's hospital board for a period of seven years.

The American Electrotherapeutic Association

Will hold its annual meeting at Hotel Pennsylvania, New York City, September 12-16, under the presidency of Dr. Curran Pope, of Louisville, Ky. Two days of this meeting will be devoted to clinical sessions at the physical therapy departments of New York hospitals. Dr. Richard Kovacs, 223 East 68th Street, New York City, is secretary. It is announced that all legally licensed physicians are invited to attend the sessions.

Dr. William P. Gilmer,

After several years as a medical missionary in Korea, is visiting his parents in Pulaski County, Virginia. Dr. Gilmer practiced for a time in Clifton Forge, Va., before entering the mission field.

Dr. A. L. Stratford, Jr.,

Richmond, sailed the last of July from New York, for a visit of some time in France, Germany and Spain.

Canada's Red Cross Seaport Nurseries.

At Quebec, Halifax, and St. John the Canadian Red Cross is maintaining seaport nurseries for immigrant mothers and children. During the past six years these nurseries have given aid to 85,000 women and children, and last year over 5,000 follow-up cards in 13 different languages were sent to the Red Cross chapters in the districts to which the families were going.

The Southwestern Virginia Medical Society

Has arranged for its next meeting to be held in Bristol, Va., September 22nd and 23rd. Dr. Z. V. Sherrill, Marion, is president, and Dr. E. G. Gill, Roanoke, secretary. In addition to voluntary papers, there will be a symposium on Pulmonary Tuberculosis, the papers in which will be read by Drs. E. E. Watson, Mt. Regis Sanatorium, Salem, and G. B. Lawson, J. F. Armentrout and S. S. Gale, of Roanoke. Invited guests at this meeting will be Drs. Carrington Williams, Richmond; Robert P. Kelly, Lynchburg, and Hunter Peak, Louisville, Ky.

Bright's Disease One Hundred Years Old.

The hundredth anniversary of the discovery of Bright's disease was celebrated with interesting exercises on July 8th, at Guy's Hospital in London, where Dr. Richard Bright, who gave his name to the disease, practiced from 1820 to 1843. Dr. W. S. Thayer, President-elect of the American Medical Associa-

tion, was one of the principal speakers on this occasion.

Dr. John M. Bailey,

Recently of Lawrenceville, Va., announces his removal to Hopewell, Va.

Church Child-Caring Workers to Strive for Family Rehabilitation.

The 200 delegates to the Conference of Church Work for Dependent and Neglected Children, held in New York recently, passed a resolution urging increased effort to discover the resources and solve the problems of the families from which the children come, to the end that the family may be kept intact and its status as a unit improved whenever possible. The delegates came from 19 States and represented 12 of the larger Protestant denominations

Exhibition of Work by the Blind.

Twenty organizations interested in the care of the blind and the prevention of blindness had an educational exhibition in New York City, the last of July, of work for and by the blind of New York State. It was the first exhibition of its kind and attracted a great deal of interest. The exhibition was assembled by the New York State Commission for the Blind.

Dr. Fred J. Kellam,

Of the class of '15, Medical College of Virginia, who has been located for several years at Ernest, Pa., has located at Indiana, Pa.

Montreal Not a Summer Resort this Year.

In view of the typhoid fever epidemic which has been prevailing in Montreal, Canada, health authorities throughout the States have been advising summer vacationists to keep away from Montreal this summer. This epidemic, which was traced to milk coming to one of the large dairy companies in that city, has resulted in about 5,000 cases of typhoid fever in the five months ending with July and in the neighborhood of 500 deaths.

Dr. J. Stewart Gilman,

Who has been practicing at Palmyra, Va., for several years, has moved to Richmond, Va., where he is associated in practice with Dr. B. H. Martin, at 5510 Grove Avenue.

The Gill Memorial Eye, Ear and Throat Hospital,

Roanoke, Va., has just issued its annual report covering work done at the hospital in its first year. This hospital evidently filled a much needed place in the hospitals of the state, as there were 10,656 examinations and treatments, with 459 operations during the year. There were two deaths in the hospital—one a man aged 78 and the other a child, aged 3 years. These figures do not include patients treated in the out-patient department of the hospital or operated upon elsewhere by members of the staff. It is a satisfaction to note that the majority of the papers published by the staff appeared in the MONTHLY.

Dr. William A. Shepherd

Has been appointed surgeon of the Richmond, Virginia, Fire Department, to succeed Dr. Charles V. Carrington, deceased.

Italy's Traveling Health Centers and Communal Clinics.

Italy's National Bureau of Maternity and Child Welfare has established four traveling health centers, each in charge of a physician, has organized obstetrical and pediatric clinics in 54 communes, and has co-operated with the Italian Union for Child Welfare in starting its first child-health center in Milan.

Dr. W. Edward Smith,

Farmville, Va., is spending several months in Boston, where he is taking post-graduate work in internal medicine at the Massachusetts General Hospital.

Will Remain at the University of Virginia.

Dr. Stephen H. Watts, at the request of President Alderman, has agreed to remain another year as Professor of Surgery and Gynecology in the University of Virginia, pending the selection of his successor.

Dr. Claude Moore,

Roanoke, Va., expects to sail on September the 10th, for a three months' trip abroad. He will visit a number of the more important medical centers and universities in Germany, Austria, Switzerland, England and Scotland. He expects to spend the greater portion of his time in Berlin and Vienna.

Dr. M. C. Sycle

Has resumed his practice in Richmond, after an absence from the city of several months. His offices are at 11 West Grace Street.

Married.

Dr. Ben Randolph, of Lowesville, Va., and Miss Rachel Warwick McNeil, of Lexington, Va., June 28.

Dr. Lawrence B. Kelleher, of the class of '26, Medical College of Virginia and last year an intern at St. Vincent's Hospital, Norfolk, Va., and Miss Martha Elizabeth Hewitt, of Norfolk, the latter part of July. They will live in Charlotte, N. C.

Dr. Lee S. Liggan,

Formerly of Richmond, after practicing for a while at Callao, Va., has located at Deep Creek, Va., which is on rural route 3, from Portsmouth, Va.

Sun Baths for Babies in France.

There is a day nursery in the Salpêtrière Hospital, Paris, for the babies of women workers, where sun baths are regularly given in fine weather. Delicate babies born in November and December are given ultra-violet baths during the winter.

Appointed Medical Examiners for Air Pilots.

Dr. Nelson Mercer and Dr. R. E. Mitchell, Richmond, have been appointed by assistant secretary of aeronautics, department of commerce, Washington, as medical examiners for all airplane pilots in the Richmond district, private and student, who wish to qualify under the regulations of this branch as transport, limited commercial and industrial pilots. These regulations and examinations are being put into effect throughout the country and, as soon as the Richmond airport is ready for service, all pilots operating out of the city will be required to be examined. Dr. Mitchell will have charge of the eye examinations, Dr. Mercer looking after the other examinations. It is the plan of the department of commerce to establish landing fields for airplanes every thirty miles and to place beacon lights every one hundred miles on each of the routes throughout the country.

Dr. Charles W. Putney,

After post-graduate study in Philadelphia, for some time, has returned to his former home in Staunton, Va.

Dr. Thomas M. Winn,

Recently of Hot Springs, Va., is taking post-graduate work for several months at the New York Polyclinic Hospital.

Dr. C. E. Foley,

Recently of Washington, D. C., has located at Front Royal, Va.

Appointments at Medical College of Virginia.

New appointments at the Medical College of Virginia, Richmond, include Dr. William B. Porter, professor of medicine; Dr. Sidney S. Negus, professor of chemistry; Dr. J. C. Forbes, assistant professor of chemistry; Dr. Lewis C. Pusch, associate in pathology, and J. G. Jantz, associate in anatomy. In addition to these full-time members of the faculty, President Sanger has announced a number of important appointments and promotions on the visiting staff of the college.

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations, information with regard to which may be obtained from the Commission or the secretary of the board of U. S. Civil Service Examiners, at the post-office or custom house in any city:

Physiotherapy aide and physiotherapy pupil aide, applications to be on file at Washington not later than September 17;

Graduate nurse and graduate nurse (visiting duty), applications to be rated as received at Washington until December 30.

Dr. Charles R. Robins,

Richmond, has just returned from Rochester, Minn., where he attended the Mayo Clinic.

Dr. Thomas W. Murrell,

Of Richmond, had the misfortune to have his new home, in the suburbs of the city, damaged by fire and water, early this month.

New Medical Director at Medical College of Virginia Hospitals.

Dr. M. B. Jarman, since November 1, 1926, medical director of the Hospital Division of the Medical College of Virginia, resigned the first of August and, after a month's vacation, will locate at Hot Springs, Va., where he and his wife, formerly Dr. Jeannette Morris, will be resident physicians to the Springs.

Dr. William P. Thompson, who has spent much time since graduation at Memorial Hospital, succeeds Dr. Jarman as medical director, and Mr. J. R. McCauley, secretary-treasurer of the Medical College of Virginia, will remain in charge of the financial affairs of the hospitals.

The American College of Physical Therapy

Announces that its 1927 clinical congress and annual meeting will be held at Hotel Sherman, Chicago, October 31st to November 5th. Dr. A. R. Hollender, 30 North Michigan Avenue, Suite 820, Chicago, is chairman of the Convention Committee.

Dr. George G. Hankins,

Newport News, Va., was recently operated on for appendicitis. He was reported as doing well when we went to press.

Obituary

Dr. Robert Madison Slaughter,

Washington, D. C., treasurer of the Medical Society of Virginia from 1903 to 1910, and formerly a vice-president in this organization, died June 3rd, after having been in bad health for a year. He was a native of Madison County, Virginia, and seventy years of age. He studied medicine at the University of Virginia and the College of Physicians and Surgeons, of Baltimore, graduating from the last named school in 1879. For more than thirty years he was located at Theological Seminary, Va., later moving to Washington. He joined the Medical Society of Virginia in 1880, and was always most active in its work, having been made an honorary member for his services to the organization. He was recipient of the Hunter McGuire prize given at the 1890 meeting of the Society for the best essay on "Diagnosis, Pathology and Treatment of Chronic Cystitis in the Male." He was a member of the Medical Examining Board of Virginia from 1894 to 1910. Dr. Slaughter is survived by three daughters, his wife having preceded him to the grave by about seven weeks.

Dr. Charles Venable Carrington,

Of Richmond, died suddenly at his home in this city, July 22nd, death being due to heart disease. Dr. Carrington was born in Charlotte County, Virginia, July 29, 1866, and graduated in medicine at the University of Virginia in 1889. Shortly thereafter, he located in Richmond, where he had since made his home and was prominently identified with the professional and social life of the city. He became a member of the Medical Society of Virginia in 1890 and was at one time a councilor in this organization. He was also an ex-president of the Richmond Academy of Medicine and was for a number of years physician to the State Penitentiary, during which time he was responsible for many reforms in the living conditions and labor system there. He had been surgeon for the Richmond Fire Department for several years. He is survived by his wife, several children, two brothers and a sister.

Dr. Robert Pollard Stryker,

New Castle, Va., died at his home in that place on June 13, death being due to pneumonia. He was 38 years of age and a graduate of the Medical College of Virginia in 1912. Dr. Stryker had been for several years a member of the Medical Society of Virginia.

Dr. Samplett Edgar Webb,

Member of the Medical Society of Virginia, committed suicide at his home in Draper, N. C., July 7. Complete mystery surrounds the deed, as Dr. Webb was apparently in good health and in the best of spirits. He was forty-nine years of age and had graduated in medicine from the University of North Carolina, School of Medicine, in 1908. His wife and young son survive him.

Dr. Lewis Allen Griffith,

Of Upper Marlboro, Md., died at his home in that place July 7, at the age of 72. He was graduated in medicine from the College of Physicians and Surgeons of Baltimore. Dr. Griffith was one of the most beloved citizens in his section and was a most active member of his county and state medical organizations. He was at one time member of the Maryland State Board of Health and for thirty years was a member of the State Board of Medical Examiners, his place being taken, when he resigned, by his son, Dr. W. Allen Griffith, of Berwyn. Besides this son, he is survived by his wife and a son, Dr. F. Webb Griffith, of Asheville, N. C. He was a brother of Dr. R. S. Griffith, of Basic City, Va.

Dr. Henry Mills Hurd,

First superintendent of Johns Hopkins Hospital and emeritus professor of psychiatry at Johns Hopkins University Medical School, died of pneumonia at his summer home in New Jersey, July 19. He was 84 years of age, and received his medical diploma from the University of Michigan Medical School in 1866.

Dr. Hanau Wolf Loeb,

St. Louis, Mo., editor of *Annals of Otology, Rhinology and Laryngology*, and secretary of the American Board of Otolaryngology, died July 6, at the age of 61 years. Death was due to heart disease. He was graduated in medicine from Ensworth Medical College, of St. Joseph, Mo.

Dr. Anthony B. Russell,

A native of Loudoun County, Va., and graduate of the University of Virginia in the class of '96, died at his home in East Orange, N. J., July 10, aged 55. He is survived by his wife and two sons, both students at the Universtiy of Virginia.